AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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Calendar for this Month.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Mo'n sets.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Mo'n sets.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	M	4 27	7 41	8 52	4 32	7 35	8 48	4 38	7 29	8 43
2	T	4 27	7 41	9 24	4 33	7 35	9 21	4 39	7 29	9 18
3	W	4 28	7 40	9 52	4 33	7 35	9 50	4 39	7 29	9 49
4	T	4 28	7 40	10 17	4 34	7 34	10 17	4 40	7 29	10 16
5	F	4 29	7 40	10 40	4 35	7 34	10 41	4 40	7 28	10 42
6	S	4 30	7 40	11 4	4 35	7 34	11 7	4 41	7 28	11 9
7	S	4 30	7 39	11 31	4 36	7 34	11 36	4 41	7 28	11 33
8	M	4 31	7 39	morn	4 36	7 33	morn	4 42	7 28	morn
9	T	4 32	7 38	0 1	4 37	7 33	0 6	4 43	7 27	0 12
10	W	4 32	7 38	0 38	4 38	7 33	0 44	4 43	7 27	0 51
11	T	4 33	7 37	1 23	4 38	7 32	1 30	4 44	7 27	1 38
12	F	4 34	7 37	2 18	4 39	7 32	2 25	4 45	7 26	2 33
13	S	4 35	7 36	3 30	4 40	7 31	3 27	4 45	7 26	3 34
14	S	4 35	7 36	rises	4 41	7 31	rises	4 46	7 25	rises
15	M	4 36	7 35	8 30	4 41	7 30	8 26	4 47	7 25	8 23
16	T	4 37	7 35	8 54	4 42	7 29	8 51	4 48	7 24	8 49
17	W	4 38	7 34	9 15	4 43	7 29	9 13	4 48	7 24	9 12
18	T	4 39	7 33	9 33	4 44	7 28	9 33	4 49	7 23	9 33
19	F	4 40	7 32	9 52	4 45	7 27	9 53	4 50	7 22	9 55
20	S	4 41	7 32	10 11	4 46	7 27	10 13	4 51	7 22	10 16
21	S	4 42	7 31	10 32	4 46	7 26	10 35	4 51	7 21	10 40
22	M	4 43	7 30	10 56	4 47	7 25	11 1	4 52	7 20	11 6
23	T	4 43	7 29	11 26	4 48	7 24	11 32	4 53	7 19	11 37
24	W	4 44	7 28	morn	4 49	7 24	morn	4 54	7 19	morn
25	T	4 45	7 27	0 3	4 50	7 23	0 10	4 55	7 18	0 17
26	F	4 46	7 26	0 50	4 51	7 22	0 58	4 56	7 17	2 6
27	S	4 47	7 25	1 50	4 52	7 21	1 57	4 56	7 16	2 5
28	S	4 48	7 24	2 59	4 53	7 20	3 6	4 57	7 15	3 14
29	M	4 49	7 23	sets	4 54	7 19	sets	4 58	7 14	sets
30	T	4 50	7 22	7 53	4 55	7 18	7 51	4 59	7 13	7 48
31	W	4 51	7 21	8 20	4 56	7 17	8 19	5 00	7 12	8 17

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart.	7	3 36 mo.	3 24 mo.	3 12 mo	3 0 mo.	2 30 mo.
Full M'n	14	6 11 mo.	5 59 mo.	5 47 mo	5 35 mo.	5 5 mo.
3d Quart.	22	7 32 mo.	7 20 mo.	7 8 mo	6 56 mo.	6 26 mo.
New M'n	29	4 56 ev.	4 44 ev.	4 32 ev.	4 20 ev.	3 50 ev.

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Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss...**Bound Volumes** from Vol. 16 to 36 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or *any* full year, sent unbound, for $1.50.....**Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Premiums for State and County Fairs.—We would again remind those who make up schedules of prizes for State and County Fairs, of the fact that Books for the Farm, Garden, and Household, or a year's subscription for the *American Agriculturist*, are among the most attractive and acceptable Premiums which can be offered. We invite correspondence upon the subject. Such premiums as we suggest, have, in past years, been offered at many Fairs, and have uniformly given great satisfaction of those who have secured them.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of *new* subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a *reading, thinking* people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so. — *Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.*, because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ *Please call the attention of your German neighbors* to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

An Experimental Farm has been established in Orange County, N. Y., by a gentleman having the cause of good husbandry at heart; the same to be under the direction of an editor of the *American Agriculturist*. This farm is to be devoted to the testing of new theories in agriculture; to the trial of new crops, fertilizers, implements, methods of practice, etc. It is an important enterprise, and its progenitor deserves the thanks of every thinking farmer. There ought to be such a farm, *under intelligent direction*, in every county of America. While in this country there are less than a half dozen Experiment Stations and Farms, in Europe they are numbered by the hundred.

A Timely Friend is the *American Agriculturist* for July 1st; its varied matter is as interesting at the noon resting hour, as in less busy seasons; the Hints about Work in field, garden, and orchard, are useful to the veteran, as well as to young farmers and amateurs. The "Basket" is a regular knowledge box, packed with facts and suggestions for every farmer from Maine to Texas. In the Humbug line, it shows up many swindles, quack-medicine, etc. In its farm science it is well up with the times. A strong feature of this journal is the great variety of ingenious devices for labor-saving contrivances, small buildings on the farm, etc. The articles on new plants, methods of work in the garden, and fruit culture, are of value and interest. The Household Department considers Morphine Dosing, Care of Children's Eyes, Putting up Fruit and Vegetables, Leaches, Lye and Soap, and various recipes. The young Microscopists are learning about the parasite that preys on the potato-beetle, how to mount objects, the Telephone, etc. The 65 illustrations are varied, instructive, and many of them beautiful. Orange Judd Company, publishers, New York; for sale by Newsdealers generally.

In Changing Your Post-office, *always* give us plainly the *former* P. O. as well as the *new*

one; and do it a month in advance. One number will probably go to the old address, as the mailing wrappers are written some weeks ahead. It is well to provide for having one number forwarded, when removing to a new P. O., if you have not given us at least a month's notice in advance of your change of address.

WHERE TO BUY.—A good Directory for procuring Implements, Seeds, Plants, Fertilizers, and many other things—from trustworthy, responsible parties, who have both the *ability* and *intention* to do what they promise—is constantly at hand in the advertising columns of this Journal. We aim to admit no other parties, and exclude medical nostrums, quackery, deceptive announcements, etc., in order to make the business pages, as well as the reading columns, a reliable source of information. It always pays to read all the advertisements through carefully; in doing this one can scarcely fail to get some new idea that will sooner or later come into account. In corresponding with advertisers, it is useful, in several ways, to always inform them through what journal you made their acquaintance.

An ATTRACTIVE CATALOGUE, finely Illustrated, of BOOKS on Rifle-practice, Hunting, Fishing, Boating, and Out-door Exercises generally.—The rapid development of Field Amusements in this country, and the increased demands for Standard Books on these subjects, has induced the ORANGE JUDD COMPANY to establish a **Special Department of Books** on the above topics. They now have in press, and will publish in a few days, a Beautifully Illustrated Catalogue, entitled "*Sportsman's Library of Standard Books*." The work has been prepared with great care, and embraces not only all their own, but other publications of any value and interest upon the subject referred to. Very many of the Illustrations are drawn from life, and faithfully portray the points and characteristics of Game Birds, Fishes, Horses, Dogs, etc., etc. The Publishers are now prepared to supply the Trade, and individual purchasers, with any of the books included in the Catalogue, which covers the entire ground. They invite their friends and the public generally, to call and examine the books in this Special Department. Copies of the Catalogue, which is an interesting work of itself, can be obtained by the trade. (It will be mailed to individuals desiring it, on forwarding their address and a couple of 3-cent postage-stamps.)

Harris' Insects Injurious to Vegetation.—A new edition of this valuable work is now in press, and will soon be ready. It is magnificently illustrated with 278 fine wood-cuts, and eight carefully engraved steel-plates, of full-page size, containing 95 figures. It is issued in two styles, both finely gotten up, but in one the steel-engravings are beautifully colored by hand, and the work bound with beveled boards and red edges. Price of colored edition, $6.50; plain edition, which is also elegant, $4. Sent post-paid by Orange Judd Company, the publishers.

Silk is a wonderful product of insect industry. It seems like spun spider-webs, and indeed it is but little coarser. And when such a concern as the Nonotuck Silk Company, of Boston, make their whole business the manufacture of "Corticelli Silk" thread, it shows the marvelous adaption of nature's minutest creations to the wants of man, when intelligently taken advantage of.

Large Grain Receipts and Sales.—The comprehensive tables on page 245, condensed from a great mass of figures, are interesting this month; rightly studied, these tables are always instructive. Table **2** shows RECEIPTS of *ten times* as much wheat for a month past this year, as compared with 1877; the increase in flour receipts (110,000 bbls.) is equal to half a million more bushels of wheat. Corn, Rye, and Barley show similarly. The SALES of Flour, Wheat, Rye, and Oats are correspondingly greater this year. Table **3** makes a still more gratifying exhibit, running the comparison back for half a dozen years. Every bushel sent abroad pays debts, or brings gold, and by so much adds to our national wealth.—Reducing the flour to wheat, we exported, from January 1 to June 11, of Wheat, Corn, Rye, and Barley, 39,310,000 bushels, against only 14,772,485 bushels last year—an increase of nearly 25,000,000 bushels, or nearly 2½ times as much.

Buchan's Cresylic Sheep Dip.—"D. S.," Joliet, Ill. This sheep dip has for its base, a preparation of carbolic acid, which is fatal to insects. It is therefore used to cure scab in sheep, also to kill the ticks which infest them. A dipping in the fall is always advisable for every flock as a preventive, if not a cure.

Information About Sheep-raising.—"J. H. H.," Ligonier, Ind. Although agriculturists in general are remarkably free from selfish jealousy, and readily impart information about their business to novices, yet it must be remembered that business men have quite enough to do to attend to their own affairs without being called upon to give instruction to every one who may desire it. We can not, therefore, give the names of persons who are prominent in any particular branch of agriculture, who would not thank us for the overwhelming number of letters they would undoubtedly receive,—a veritable surprise party, and one of the most unwelcome sort. You will find all the information you want about sheep-raising—the best climates, soils, breeds of sheep, and management, in "Stewart's Shepherd's Manual." Price $1.50.

When to Use Lime or Ashes.—"J. M. P.," Vienna, Ill. They may be spread at any time in the fall or winter. Lime dissolves slowly, but most readily, in the coldest water. The potash of the ashes that may be dissolved out will be retained in the soil.

Fertilizers for Worn Out Land.—"S. R. L.," Ullin, Ill., and W. A. R., Delphi, Ind. Land so run out by wheat-growing as to be so poor that it will not grow clover, can generally be brought into good condition by using 200 to 300 lbs. of guano per acre, or of the Stockbridge or Mapes' rye manure, and sowing winter rye. When the crop is nearly ripe, plow it under; then sow rye again, and plow that under. If the second crop will grow without manure, don't use any, but save it for the crops to be harvested. As soon as the land is rich enough, sow clover; at first if possible, with use of fertilizers, as indicated for rye. Cut the first crop of clover, *and plow under the aftermath*, as then a larger mass of roots will have developed in the soil.

Let Cancer Doctors Alone.—It is greatly to be regretted that some, even of the religious journals, of the highest character, admit into their columns the advertisements (and "puffs," too,) of "Cancer Doctors." We could say a good deal on this subject, and may do so if it seems to be needed by our readers; but will here only state that no heed should be given to a single one of these advertising curers of cancers, no matter how highly commended. A real cancer is a very rare thing; it is so marked that any good physician will know it; and all possible means of alleviation are understood, or easily accessible, to the regular medical profession, and the best advice is obtainable at regular rates. The Cancer Doctors (offering free to "clergymen and the poor," as they can well afford to do, a pennyworth of caustic, for the advertising they thus get,) grow rich on large fees from others. They easily persuade a nervous person that a colored spot, or eruption, or sore, or wen, is a "cancer;" they apply caustic, and remove it, and get the praise, and puffing, and notoriety, and patronage, arising from the reputation of having *cured* an actual cancer—which they have not done. They are generally shrewd enough to invent excuses for not curing a real cancer, when they happen to get hold of such a case. Cancers may sometimes be a little alleviated by a good, regular physician; it is not probable that a *real* cancer was ever cured. All the cures heralded are cases that needed no cancer doctor's application.

Milking-tubes.—"A Subscriber," who, when he "blows up," might give his real name, is surprised that we should recommend milking-tubes or machines, believing that the suction of the calf is the proper method of milking. He suggests introducing milk into the stomach through tubes as a parallel case, and that, therefore, the milk-tube is unnatural and improper. So we thought once, but a stubborn fact in the shape of a nervous cow with sore teats, and several pails of milk upset, and sore arms and shins, changed our views. The writer has been for a month past, and is now, milking all his cows with the machine, and has no objection to it, upon any account, but many reasons to rejoice that he was induced to test it, in spite of some reluctance.

Fowler's Sale of Jerseys, at Herkness's Bazar, Philadelphia, a few weeks since, disposed of some fine animals at fair prices. If the sale to come off this month at Cincinnati shall include as good animals as this, the breeders of that region will get some fine Jerseys. One feature of Mr. Fowler's sales, not too common, is that they are always actual sales, and are to be commended in that as setting a good example to those people whose auctions have compelled many to state in their advertisements that theirs were to be *bona fide* sales, as if the public expected the bidding-in.

An Explanation is desired by the owner of the stock mentioned in "Among the Farmers," in the June number, under a "third sale," and as a "closing out sale." His reasons for having some of the cattle bid in, were as follows: The sale was advertised in the March *American Agriculturist*, but by mistake the card was omitted from the April issue, although the sale was in April; a correspondent wrote to another journal that the sale was to take place in March, and it was a stormy morning; for which three reasons many were kept from the sale; and, further, there was a serious sickness in his family, which prevented proper attention to the auction. So the owner claims that he was justified in the course pursued, and was endorsed by his friends.

Oil from Pea Nuts.—"W. J. D.," Red River, La. Pea nuts contain 30 to 40 per cent of oil, and yield besides about 58 to 68 per cent of cake, which is a very nutritious feeding substance. The process of extracting the oil is in no way different from that used in the linseed, cotton seed, or castor bean oil manufacture. The nuts are ground; the meal is put into hair-cloth bags, and these are pressed between heated metal plates in a very powerful hydraulic press. We can not give the cost of the machinery precisely, but $1,000 will procure sufficient to work up 2,500 bushels per year. D. Kahnweiler, of 120 Center St., N. Y., would probably be able to give some information as to cost of machinery. A 6-horse power engine would be sufficient for a small mill.

Incubators.—"J. P. W.," St. Louis. The incubators which have been described in the *American Agriculturist* are patented, and any person who makes them without authority from the patentees would be liable to prosecution. Besides, these machines are so sensitive in their use that, unless perfectly well made, they would not be effective.

Cotton-Seed Huller.—"R. L. S.," Chenevville, La. Kahnweiler's cotton-seed huller is a very effective machine, costing only a moderate sum in proportion to its usefulness, to any Southern farmer who wishes to use cotton-seed, either for a fertilizer or for feed. For use in oil-mills, it is a standard machine.

Nitrate of Soda for Grass.—"Subscriber." This is an excellent fertilizer for grass, either in spring, or for use immediately after cutting, and is beneficial on almost any kind of soil, though its effects are more conspicuous on light land. But the retentive power of the soil for it is so slight, that a heavy rain coming just after its application will wash it into a light soil beyond the reach of the roots. Moreover, it should be remembered that nitrate of soda has only one element of fertility—the nitrogen, in the form of nitric acid—and is entirely lacking in potash and phosphoric acid. For starting grass, it has no superior, but can not be relied on as an exclusive manure. "Now that an agency of the Peruvian Government has been established in this country for its sale," it should be obtainable at a low price.

The Prospect for Dairying.—"M. E. H.," Story Co., Ia. Good Western butter brings as good prices as any other in market, and an extra good quality always sells well. There are "ups and downs" in all branches of business, yet it is a fact that dairy-farmers make more money, and get it in a more regular way, than grain farmers. With good pasturage, water, and grass land, dairying is more promising than grain-growing. For grinding the grain, the "big giant" mill would be useful; and a plan of a dairy-barn, that can be made small or large, was given in the *American Agriculturist* for June last.

Connecticut Experiment Station.—Bulletins 12, 13, 14, and 15, have analyses from 117 to 148. It is evident that the New Haven chemists place the value of nitrogen, potash, and phosphoric acid at a much lower rate than do the manufacturers; for in all these 32 analyses, only eight have an estimated value equal to the cost. These are Peter Cooper's Ground Bone (two samples), Forrester's Potato Fertilizer, Peruvian Guano, G. W. Baker's Bone-manure, Rafferty & Williams' Bone-meal, and several samples of muriate potash. As some of these valuations differ materially from those of other good chemists, the basis of calculation should be given, when publishing reports adverse to men believed to be reliable; although there are some in the lot we should feel no mercy for.

Foot-Rot in Sheep.—"J. B.," Lawrence Co., Pa. Foot-rot in sheep is caused by a decay of the horn of the sole and crust. It becomes malignant and contagious when the products of the decomposition poison the adjacent tissues, and cause an acrid discharge which conveys infection to the feet of other sheep. To cure it, the hoof should be pared; all rotten horn cut away; the diseased parts dressed with some caustic substance, such as carbolic acid, or a strong solution of sulphate of copper, and the diseased animals kept in a dry, clean yard, or a fresh grass-plot. Infested yards or pastures should be plowed up, or left unoccupied by sheep, for at least two years. For fuller account of this disease refer to "Stewart's Shepherd's Manual," price $1.50.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1878.

Hints for Work.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The Harvest, after all the promise of the early season, is not much above an average as to yield, although the acreage is larger. What may be the products of fall sown grain, can not be ascertained until the crop is threshed and measured. From general indications it cannot be expected that the sanguine hopes held in spring will have been verified. It is probable that the failures mostly result from the depredations of insects, and defective fertilizing, which, as a rule, happens every year.

The Hessian Fly has done much damage in early sown wheat. Experience has shown that the means for exemption from its depredations that have been most successful, have been the use of fine salt, at the rate of 6 bushels per acre, and fine lime, soon after the plants have become large enough to attract the fly; late planting, thorough preparation of the soil, and the removal of all rubbish and weeds; ample manuring of the soil so as to stimulate a vigorous growth, and abundant stooling from the root-buds, by which new spires are thrown up in place of those injured; and lastly, by sowing only the most vigorous and hardy stemmed varieties.

In the writer's Experiments, the past season, the "Clawson," and the "Silver Chaff" wheats, sown on the 29th of September, and dressed with only 100 lbs. per acre of artificial wheat-manure (with 200 lbs. more in the spring), were completely exempt from the attacks of the fly.

A Clover-sod for Wheat.—No other preparation for wheat is so generally successful as a clover-sod plowed under early. This method, however, upsets the usual rotation in which clover follows wheat. But a good wheat crop is better than a poor rotation; and the clover may come with the barley after corn, following a crop of turnips, sown upon wheat stubble. If we can produce 40 bushels to the acre, it will pay to grow wheat even with some trouble.

What shall be done with the Clover-sod?—It may be considered that a good crop of clover actually adds to the future capacity of the land instead of exhausting it to any extent. This occurs through the large addition to the soil, of nitrogenous and other organic matters derived from the atmosphere, and fertility brought up by the deep-searching roots. To secure the most benefit, the second crop should be plowed under early in September, with the seed, which is not lost, but returns to us again as a new growth of clover, when brought to the surface by replowing. If a crop of seed is desired, we should encourage a large growth, by top-dressing it at once, and thus put the soil in the best condition for wheat.

Quack Grass.—Careless farmers are laying up a store of trouble for themselves in permitting their farms to become overrun with quack grass, *Triticum repens;* there is no more troublesome weed, and no other that increases so fast by neglect. But the July and August sun will be a match for even this weed if we give the solar heat a chance to roast its roots. The cultivator is a better implement than the plow or harrow; and a "grubber" with curved teeth, which tear out the roots and gather them on the surface, is the best kind of gatherer.

Summer Fallows, once so frequent, are now considered of questionable value. As a means of improving the fertility of the soil, they are needless, now that we can procure artificial fertilizers at a less cost than that of the labor employed in the fallowing, and can raise a crop of roots or green fodder, that will clean the land and pay for the fertilizer several times over.

Oats, is generally the last of the small grains to be harvested, and is frequently gathered too late. If left until over ripe, the grain scatters badly; and the appearance of an oat stubble always tells how much is lost. If at all over-ripe for cutting, oats should be reaped early in the morning, and never handled in the middle of the day. The straw is sufficiently valuable for feeding to make it worth while to cut the crop before the straw is entirely yellow from foot to head.

Corn.—We have noticed that the most successful producers of corn are always the last in the field with the cultivator. To "lay by" this crop in July is too early. The weeds thus have unnecessary opportunity to grow and mature seed. It is a question if it is not best to thin out the stalks more than is commonly done; to grow the grain crop by itself, with but two stalks, or even one, in a hill; and that for fodder by itself, with the stalks as closely set as possible for thrifty growth.

Growing Seed Corn.—Any grain can be greatly improved by selecting the best each year, and continuing to plant this for several seasons. No other grain-plant that we grow has so many abortive ears as corn. If we can make each of these productive, the yield can be greatly multiplied. If any farmer wishes to experiment in this way, he might begin this month by thinning out the plants, removing suckers, and encouraging the growth of the seed, instead of a useless amount of the stalk and leaf.

Fodder Crops.—Repeated plantings of fodder-corn may yet be made. Golden millet has proved a very productive fodder-crop for planting early this month; and the new "Pearl millet" is worthy of a trial. Cabbages set out upon early potato ground will give one of the very best fodder-crops.... Nothing else is better for milking cows than

Roots.—For planting this month up to the 12th or 15th, ruta-bagas, or Swede turnips, are excellent. Imperial Swede turnip is a new variety, that has been recently imported, and has been highly commended as yielding largely. No better ground than that from which early potatoes have been taken, can be had. Sow in drills 30 inches apart on rich soil, with 3 lbs. of seed to the acre. For later sowing this month and next, the "Greystone" turnip is a very prolific new kind, recently imported.

Early Potatoes, in many places, have fairly escaped the dreaded beetle, and are making a good crop. They should be harvested as soon as ripe, lest wet weather cause them to sprout. A second crop may be made by planting the earliest kinds the first of this month. Of all the new sorts, none have as yet displaced the Early Rose.

Late Potatoes should be free from weeds, *and beetles;* to suffer the leaves to be eaten off is a permanent injury to the roots. Generally it is the latest crop of beetles which does the most damage.

Buckwheat.—For a late crop, or one to occupy a rough piece of ground that needs mellowing, buckwheat may be sown up to the 12th of July. Half a bushel to one bushel of seed per acre is needed. A new variety, the "Silver Hull," is a beautiful, prolific, and valuable kind. We have sown timothy and clover successfully, with buckwheat, in July.

Live-Stock.—During the press of work the care of the animals must not be neglected. Plenty of good food and pure water should be given with regularity; the latter is specially important and necessary for health. They should be protected from flies and other insect pests, sheltered from the extreme mid-day heats, and kept clean. The ordinary sanitary rules which apply to our own health should be observed in regard to them.

Sheep should have a change of pasture. They are then more contented, and thrive better. A large field will not graze so many as several small ones of the same aggregate size. Give salt at least once a week. For scours, give a tablespoonful of castor oil; if continued, give a teaspoonful each of prepared chalk, and essence of peppermint, in a cupful of water. For stretches, which is only indigestion, common when the pasture gets dry, give an ounce of linseed-oil with a dram of ground ginger.

Pigs.—A run on a good clover stubble will be very beneficial. When confined in yards and pens, bedding of clean dry sand, several inches deep, will be found better than any other litter. An occasional sprinkling of a solution of copperas about the yards, or a good dusting with ground gypsum, will act as a deodorizer and disinfectant. Young pigs should be forced just now, as fast as healthy growth will permit. Pork is advancing in value, and pigs may justly claim a little more attention than when it was worth but $8 a barrel. Now is a good time to improve the stock. For November pigs, couple this month, and use a boar of some pure breed.

Poultry.—July chickens, if well cared for, will be large enough to go through the winter safely. After July we would set no hens, but set all possible up to the middle of the month. In the hot days of midsummer vermin breed very fast, and cleanliness alone will keep them in subjection.

Pests now run riot with the stock. The bot-flies are perhaps the worst. Wash their eggs from the legs of horses with warm water, or scrape them off with a knife. Protect cattle from their bot-fly, which lays its eggs on the loins, by rubbing a little crude petroleum on the backs of the animals. Tar sheep's noses to keep the sheep bot-fly from laying eggs in their nostrils. These means of prevention will add much to the comfort of the animals. By keeping stables clean and dark, the hateful black-fly (*Stomoxys calcitrans*), in general appearance so much like a house-fly, will be less annoying.

Notes on Orchard and Garden Work.

In former years we have suggested that if there was any time during the growing season in which the orchardist and gardener might "go a-fishing" with a clear conscience, it is during these months of July and August. It should be an especially favorable season for leisure this year, as—despite a few drawbacks—most of us have been able to keep well ahead of the work. To one whose work is always ahead of him, leisure never comes. In the term "going a-fishing" we include whatever takes the cultivator away from his "patch," and allows him to see what others are doing, and he may get quite as much recreation by fishing for ideas in the ponds and preserves of the orchards and gardens of other cultivators, as by the actual use of the hook and line. A week or two devoted to going among others engaged in similar pursuits—and this need not, of necessity, be very far from home—will give one a freshening up that will be worth more than all it costs, and the good influences of which will last all the year. To all who make use of the comparative leisure of mid-summer to visit the orchards, gardens, and ground of others, we have one bit of advice to give:

"Shut Your Own Gate Behind You!"

When you leave your garden, fruit patch, or grounds, of whatever kind, *shut the gate*, and leave whatever is behind it, there—don't take it with you. Recollect that when you visit the place of another, you go to see what *he* has to show, and learn what *he* has to teach. If you would be a welcome visitor, and be dismissed with a pressing invitation to come again, place yourself in a receptive mood; be for the time the attentive pupil and not the teacher. When others visit your place, will be the proper time to teach. Of all the intolerable bores who visit us is the man who brings his own place with him, and who, whatever may be shown him, at once institutes a comparison with his own, and at once begins to tell that "mine are much better than that,"—"I can beat you on so and so," and ignoring the thing before him tell us, "Ah, you should see my strawberries," "My roses," "My tomatoes," and so on all through—in short, the man who did not "shut his own gate behind him." Those who are so thoroughly satisfied with their own that they can not forget it for a few hours, should not visit, but remain upon the scene of their remarkable achievements—at home. We would not imply that one in visiting the grounds of another, may not, on occasion, drop a useful hint drawn from his own experience, or that he may not give his host any information that he may ask for. But we have been so annoyed at receiving visitors, and worse still, in visiting strange grounds in company with those whose only object in visiting appears to be to boast of their own affairs, that we

feel called upon to protest against it. Those who thoughtlessly fall into this unpleasant error, need only to be reminded of it, and they will sensibly avoid it. From the chronic boaster of his own achievements, we hope to be delivered.

The Benefits of Excursions

to other localities where others are following similar pursuits to our own, are not to be measured by the profitable hints we may pick up, but there is a mental and bodily relief that comes from a change of scene, which will allow one to return to the later work of the season refreshed, and with a spirit of content—for one who travels with his eyes open, can not fail to see that others, as well as himself, have their discomforts and drawbacks, and he is all the more disposed to meet his own with a brave spirit.

Orchard and Nursery.

On various occasions we have called attention to the value of early varieties of apples for a near market. This is a matter of special importance to orchardists in the Eastern States—indeed, to all fruit growers who live near large cities anywhere.

Winter Apples have a very long season, and if properly packed, may be transported for very great distances without any injury, and their slow ripening allows them to be stored for weeks or months. This peculiarity of late fruit allows the grower at a distance, where land is cheap, to compete with the orchardist near the markets. But with

Early Apples, the advantage is all on the side of the home market. Early varieties are short-lived—*i. e.*, the period between the time when they are fit to pick, and that when they should reach the consumer is very short. Their general tender character does not allow of long transportation, as they are easily bruised, and soon fall into decay. For these reasons it is worth while for those who have orchards near large cities to consider the experience of the fruit-growers of Monmouth Co., N. J., and other localities near New York City. These gentlemen have ceased to compete with the orchardists in Ohio, Michigan, and other Western States, and find their profit in early fruit, of kinds which the Western growers can not possibly supply.

Care with Early Fruit is quite essential to success, and selection and neat packing are found to be as important with this as with any other fruit. The time when one would fill a wagon body with Early Harvest or Sweet Bough apples, put in a shovel and half-bushel measure, go to the nearest village and shovel up his fruit, has gone by. It pays to select the fruit, pack it in paper-lined new half barrels, or in baskets or crates, and put it upon the market as carefully as if it were pears or peaches. Thus treated, summer apples pay, as some growers know to their profit. Among the best and most

Profitable Early Apples, we enumerate the following, remarking that the list, as with fruit lists, will not answer for all localities: Benoni; Carolina Red June; Early Harvest; Large Yellow Bough; Primate, one of the best, but tender; Red Astrachan, tart, and excellent for cooking; Summer Queen, large and profitable; Tetofsky; William's Favorite. A variety locally called "Orange Pippin," is also very profitable in New Jersey.

Early Pears come to maturity rapidly, and if not gathered in time, many are apt to rot at the core. Selection and neat packing pay with these.

Thinning Fruit, however thoroughly it may have been done early in the season, will still need attention, and any excess may still be removed.

Young Trees.—See former months for the needed mulching, care against strangling with labels, etc. Much pruning may be avoided by occasional pinching the young growth, and removing entirely shoots that start where branches are not needed.

Blight.—We know nothing of this mysterious malady until the fatal blow has fallen. Cut away the blighted twig, branch, or tree, back to sound wood, and as a precaution, burn the dead prunings.

Insects.—It is not practicable to repeat every month and every year the whole insect story. In brief: *Borers* show themselves by "saw-dust," by gum, and by a flattened dead-looking place on the bark. Cut out or probe with wire....The peach-borer is to be sought for just at or below the surface; the insect lays its eggs from now until autumn. A small mound of coal-ashes around the trees has been found useful....*Codling Moth.*—Pick up and feed to pigs all fallen fruit, or keep pigs in the orchard. Examine weekly the traps, whether of cloth or hay-bands, and kill those that have hidden there. Cloth traps may be run through an old clothes-wringer....*Slugs*, on pear, cherry, and other trees—little dark-green, slow-moving, slimy creatures—are killed by dusting lime, ashes, or even fine road dust....Late nests of the *Tent Caterpillar*, and those of the *Fall Web-worm*, now often abundant, must be destroyed wherever found.

Black Knot, often mistakenly supposed to be the work of an insect, should be cut out on its first appearance on plum and cherry trees.

The Time for Budding varies with the locality. Cherries and plums are ready first, and the pear next. The proper time is when well-formed buds may be had, and the stocks are in growing condition, so that the bark readily parts from the wood.

Fruit Garden.

Whatever is said on the general treatment of trees, and on insects, under Orchard, is generally applicable to trees in the Fruit Garden.

Grape-vines.—It was not necessary to give a special article on our "One Grape-vine" this month, the directions given on page 222 last month being sufficient for the treatment of the young vine. The growth this year of the new vine being preparatory only, all that can be done is to encourage the production of a single strong, vigorous cane. When the shoot has reached the top of the stake, let it hang over as it will. Keep the laterals pinched as there directed; pick off all beetles and caterpillars, and use sulphur freely if mildew appears.

Old Vines need similar treatment as to laterals, insects, and mildew. Chance shoots often appear on the arms, or other parts of the old wood. If these are not wanted, rub them off at once. But it sometimes happens that these come just where we would like to have a cane, to allow some change to be made in the training, such as to give us a new arm to replace one that is faulty: in such case we have only to encourage the new growth.

Summer Layering is an easy and rapid method of propagating the vine. As soon as a shoot of the present season, in a convenient place, becomes hard enough to handle—recollect that they break with the greatest ease at the *nodes* or joints—open a trench a few inches deep, and bury a few joints, removing the leaves from the buried part of the shoot; put down a stake, and turn up and fasten the end of the shoot to it, and treat this as if it were a young vine. In hot weather, and in light soil, it is well to lay a flat stone over the buried part of the vine, to keep the place moist.

Blackberries and Raspberries, as all cultivators should know, have *biennial* stems. The shoot which grows this season will bear fruit next summer; the stems now bearing fruit will die in the fall, to be succeeded by those now green and growing. Growers differ as to the propriety of removing the stems as soon as the fruit is off, some preferring to leave them until fall, under the plea that they will help strengthen the root. As good cultivators are equally divided on this, both parties claiming that practice warrants their view, we doubt if it is a matter of great importance, and would follow the most convenient course. New shoots, or canes for next year's fruit, should be cared for, and all that start, but are not needed, be hoed up as weeds. Raspberries may be stopped in their upward growth, by pinching, when at three or four feet, and blackberries at five or six feet. This pinching the tops will cause side branches to grow, which are to be kept in control by pinching when they have grown as long as desirable.

Black-cap and Purple-cane varieties do not throw up suckers at a distance from the old stool, but their new shoots start from the base of the plants, and these should be cared for as above suggested, as the branches that have fruited this season must be cut away in the fall, if not sooner.

Strawberries must be kept clear of weeds; if the single stool, or single row, method is adopted, then keep off all runners; if they are grown in alternate beds, then encourage the runners to take root in the intermediate spaces, to form a new bed.

Kitchen and Market Garden.

Notwithstanding this has been mentioned as one of the gardener's leisure months, it should, in one respect, be one of his most *stirring* months, so far as the soil is concerned. Those who wait until weeds need to be killed, before they set the cultivator, hoe, or rake, at work, lose much. Killing weeds is an important work, but is not the only good resulting from the frequent use of tillage implements. In a hard, compact soil, moisture readily finds its way up from below, and evaporates; if the surface is fine and loose, this loss of moisture ceases, and good cultivators know that a layer of loose soil is one of the best possible mulches. We have often advised the frequent use amongst the plants of a rake with long, sharp teeth; this allows of going over much surface that the cultivator can not reach, allows of rapid work, and besides being one of the most efficient weeders, leaves the surface of the soil in the best condition to resist drouth.

Asparagus.—See last month. The growth of tops will keep down all but a few coarse weeds, which should be pulled up as they appear.

Succession Crops will not be overlooked by those who would make the most of their gardens. Corn, Bush-beans, Beets, and Cucumbers may be sown.

Beets make in hot weather one of the best substitutes for spinach, and are sown by some for this purpose only; but we also keep up a succession of the Egyptian for their roots, as they are vastly preferable to late sorts.

Cabbages and Cauliflowers.—The late crop in the latitude of New York is set by the middle of the month. If to be worked by horse cultivator, make the rows three feet apart, and set the plants 18 to 24 inches apart, according to the variety. Examine the plants, and set none that have bad roots, or have gone "blind," by injury to the growing point, or terminal bud. Set well down, and then press the earth firmly around with the foot.

Celery.—Around New York the main crop is set the first half of the month. Market gardeners have quite given up trench-planting, but set the plants on the surface in well-manured soil, and do not commence earthing up until the plants have made a large share of their growth. The dwarf varieties are grown almost exclusively. Ground that has been heavily manured for early crops of cabbages, etc., is laid out in rows three feet apart, and the plants set at six inches in the rows. Press the earth firmly around the plants, and keep them free from weeds.

Egg Plants, when fairly established, may be pushed with liquid manure every two or three days. Where potato-bugs abound, the plants have an almost hopeless "struggle for existence."

Squashes, Melons, and all of the family, are attacked by insects from the first show of the seed-leaf to the gathering of the fruit. Those which attack the foliage are bad enough, but the borers, which enter the vine near the root, wait until the plant seems out of danger, and then bring it to a sudden end. Several advise covering the vine with earth for the first three or four joints from the root. More fruit is usually set than can be matured, and it is well to remove the excess. *Mem.*—Winter squashes, even when very young, are better for the table than any summer squash. Allow the vines of these to take root at the joints.

Sweet Potatoes need to be kept clear of weeds until they cover the ground. In northern climates, the vines should be prevented from taking root at the joints, which is easily done by running a rake or smooth pole under, and lifting them.

Tomatoes.—See last month for hints on supports. In field culture, the vines are allowed to spread upon the ground. Several have asked for directions for pruning tomatoes; the only pruning that we have found profitable (and we have tried the French system, where fruit is treated as if it were

worth $1 each, instead of, as with us, 25 or 50 cts. a bushel), is that common-sense work which keeps the vine from becoming a matted thicket, and prevents them from being loaded with half-grown fruit when frost comes.

Insects on Tomatoes.—The potato-bug (Colorado) seems to be very freaky; sometimes it is a real pest on tomatoes, and again will leave them untouched. The worst enemy is the great sphinx caterpillar, as large as one's finger, which takes leaves, stems, and green fruit; wherever its coarse and abundant droppings are seen upon the ground, search for, and kill it. The horn on its tail is not a sting, and it can not bite the finger.

Turnips of the ruta-baga sorts, in the climate of New York, should be sown before the middle of the month. As soon as fairly up, sprinkle with air-slaked lime or a mixture of ashes and plaster. Cultivators differ as to transplanting in field culture, but in family gardens it is often desirable, to fill places that would be unoccupied. We know of none equal to the Long White French, for home use.

Odds and Ends.—Root crops of all kinds are usually too much crowded; one well developed and quickly grown root is better than two or three starved ones....Keep the soil stirred between the rows until the leaves prevent....If seeds are saved, do not, as is often done, take the leavings, but select the seed melons, squashes, tomatoes, etc., from the earliest and finest....For late crops of Sweet-corn, etc., choose the early and quickly maturing varieties; any excess may be dried.

Flower Garden and Lawn.

The mowing of lawns is directed by some to be done once a week, which may or may not be proper according to the season. Like other garden operations, this is one requiring judgment; the lawn should be mown when it needs it, and no oftener, and it is not generally likely to need it during a long continued drouth....The main work here is to keep everything in good order, and most of it has been anticipated by the Notes of last and earlier months....Dahlias of varieties with heavy branches will do better with three stakes instead of one....A large share of the ornamental shrubs may be easily propagated from the cuttings of this season's growth set in sandy soil under a well shaded sash. ....Nothing is more unsightly than faded flower clusters left upon shrubs and perennials, and these should be always cut away as soon as they have done their best, unless seeds are wanted.

Greenhouse and Window Plants.

The plants left in the house, whether few or many, need daily care in watering, ventilating, shading, and fumigating....Plants that have been set out of doors, unless plunged, are apt to suffer from too much heat at the roots; the pots should be screened, by the use of boards, or by some other method....The roots in pots that are plunged may make their way through the hole at the bottom, and finding fresh and congenial soil will often grow so rampantly that when taken up in the fall the larger share of the roots are on the outside; these can not be cut away without a severe check to the plant, and its occurrence should be avoided by occasionally turning the pots to break off such roots while young....Only a few plants will bloom continuously, winter and summer, and carnations, roses, and others that are expected to flower in the window or greenhouse next winter, should have their buds removed as they appear....House-plants that have been turned out of their pots and set in the garden, will often grow during the season to a size that unfits them for their former use, and the better way is to start new young plants from cuttings to take their places....The so-called "Saucer System" of striking cuttings will answer most of the wants of the amateur in mid-summer. It is simply to take a dish that will hold an inch or so of pure sand, put in cuttings of new and tender shoots, and keep them exposed to full sun, and at the same time to keep the sand always—not moist, but "sopping wet,"—in fact, in the state of mud. Those who have never tried this will be astonished at the large share of cuttings that will take root. When rooted, pot off in small pots of good open soil.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	May 13.	June 13.
PRICE OF GOLD	100 1-2	100 7-8
FLOUR—Super to Extra State	$4 10 @ 4 40	$3 35 @ 4 75
Super to Extra Southern	4 10 @ 7 75	3 50 @ 7 25
Extra Western	4 60 @ 8 50	4 15 @ 8 00
Extra Genesee	4 75 @ 8 00	4 50 @ 6 25
Superfine Western	4 10 @ 4 60	3 35 @ 4 15
RYE FLOUR, Superfine	3 00 @ 3 75	3 00 @ 3 65
CORN-MEAL	2 25 @ 3 10	2 10 @ 2 85
WHEAT—All kinds of White	1 35 @ 1 43	1 20 @ 1 30
All kinds of Red and Amber	1 00 @ 1 38	95 @ 1 18
CORN—Yellow	50 @ 56	45 @ 54
Mixed	48 @ 56	40 @ 46
White	50 @ 57	45 @ 57
OATS—Western	32½@ 40	27 @ 36½
State	33 @ 41	28½@ 36
RYE	70 @ 75	63 @ 68
BARLEY	46½@ 85	40 @ 80
BARLEY MALT	65 @ 1 10	60 @ 1 10
HAY—Bale, ₱ 100 lbs	40 @ 85	35 @ 75
STRAW, ₱ 100 lbs	35 @ 65	35 @ 55
COTTON—Middlings, ₱ lb	10¾@ 10¾	11¼@ 11¾
HOPS—Crop of 1877, ₱ lb	5 @ 10	5 @ 10
" old, ₱ lb	1 @ 3	1 @ 3
FEATHERS—Live Geese, ₱ lb	35 @ 47½	35 @ 48
SEED—Clover, West. & St'n ₱ lb	7¾@ 7¾	7¾@ 8
Timothy, ₱ bushel	1 25 @ 1 37½	1 25 @ 1 40
Flax, ₱ bushel	1 40 @ 1 60	1 35 @ 1 45
SUGAR—Refin'g & Grocery ₱ lb	6 @ 8¾	6 @ 8¾
MOLASSES, Cuba, ₱ gal	32 @ 36	25 @ 38
New Orleans, ₱ gal	33 @ 50	23 @ 48
COFFEE—Rio(Gold)	14¼@ 17¾	13¾@ 16½
TOBACCO, Kentucky, &c., ₱ lb	2½@ 14	2½@ 14
Seed Leaf, ₱ lb	4 @ 50	4 @ 50
WOOL—Domestic Fleece, ₱ lb	23 @ 46	22 @ 45
Domestic, pulled, ₱ lb	18 @ 35	16 @ 33
California, spring clip	12 @ 27	12 @ 27
California fall clip	10 @ 19	10 @ 19
TALLOW, ₱ lb	7¾@ 7¾	7 @ 7¾
OIL-CAKE—₱ ton	30 00 @31 00	30 00 @31 00
PORK—Mess, ₱ barrel	9 30 @ 9 75	10 00 @10 35
Extra Prime, ₱ barrel	8 50 @ —	Nominal.
BEEF—Extra mess	12 00 @12 25	11 75 @12 00
LARD, in tcs. & bbls, ₱ 100 lb	6 62½@ 7 75	7 00 @ 7 35
BUTTER—State, ₱ lb	10 @ 23	6 @ 19
Western, poor to fancy, ₱ lb	7 @ 23	6 @ 19
CHEESE	4 @ 11½	3 @ 8¾
EGGS—Fresh, ₱ dozen	10½@ 13½	13½@ 15½
POULTRY—Fowls, ₱ lb	9 @ 15	9 @ 13
Chickens, ₱ lb	20 @ 33	18 @ 27
" ₱ pair	50 @ 1 25	— @ —
Turkeys—₱ lb	10 @ 17	9 @ 13
Geese, ₱ pair	75 @ 1 50	1 00 @ 1 50
Ducks, ₱ pair	60 @ 1 12	50 @ 90
Roosters, ₱ lb	6 @ 8	5 @ 6
Capons, ₱ lb	25 @ 33	24 @ 30
PIGEONS, wild, ₱ doz	— @ —	40 @ 65
SQUABS, per dozen	— @ —	40 @ 1 75
SNIPE, per doz	— @ —	25 @ 3 00
APPLES—₱ barrel	2 75 @ 6 00	2 75 @ 5 75
PEANUTS, domestic, ₱ bush	85 @ 1 40	90 @ 1 50
STRAWBERRIES, ₱ quart	20 @ 30	5 @ 8½
CHERRIES, ₱ lb	— @ —	6 @ 12½
CRANBERRIES—₱ bbl	6 00 @ 9 00	— @ —
RADISHES, new, ₱ 100 bun	50 @ 1 25	40 @ 75
PEAS—Canada, in bond, ₱ bu	82 @ 88	76 @ 78
" green, ₱ bush	1 05 @ 1 10	1 05 @ 1 75
" new, ₱ bbl	4 00 @ 5 00	2 00 @ 2 25
POTATOES, new, ₱ bbl	3 00 @ 7 00	1 25 @ 3 50
POTATOES—old, ₱ bbl	1 00 @ 1 50	1 25 @ 1 75
SWEET POTATOES—new ₱ crate	50 @ 1 25	— @ —
BEETS, ₱ 100 bunches	— @ —	2 00 @ 3 00
TURNIPS ₱ bbl	25 @ 62½	1 00 @ 1 50
" white, ₱ 100 bunches	1 50 @ 2 00	2 00 @ 3 50
BEANS—₱ bushel	1 50 @ 2 60	1 25 @ 2 50
BROOM-CORN	4 @ 7¾	3½@ 7¾
SPINACH, ₱ bbl	50 @ 75	37 @ 50
TOMATOES, ₱ box	50 @ 80	50 @ 75
CAULIFLOWER, ₱ bbl	— @ —	1 00 @ 3 50
CABBAGES—new, ₱ bbl	5 00 @10 00	75 @ 1 50
ONIONS—₱ bbl	1 25 @ 3 50	— @ —
₱ crate	— @ —	50 @ 1 25
RHUBARB, ₱ 100 bunches	75 @ 2 00	1 25 @ 2 25
ASPARAGUS, new, ₱ doz. bun	75 @ 1 50	1 00 @ 1 75
LETTUCE, ₱ bbl	1 50 @ 2 50	50 @ 75
SQUASH, ₱ bbl	1 25 @ 1 75	— @ —
STRING BEANS, ₱ bbl	1 50 @ 2 00	2 75 @ 3 50
WATERCRESSES, ₱ bbl	2 00 @ 3 00	— @ —
CUCUMBERS, ₱ crate	2 00 @ 4 75	30 @ 1 25

Gold has been up to 101¼, and down to 100⅝, closing June 13, at 100⅞, as against 100½ on May 13; 100¼ on April 17th; 102⅛ on January 12; 103 on December 12; 102⅜ on November 12; 103 on October 12; 105⅛ on July 12; 104⅜ on June 12, of last year....Under very liberal offerings, favorable crop reports, and the pacific tenor of the European advices, prices of Breadstuffs have declined materially within the month, leading to extensive dealings, largely on export account (shippers buying Wheat, Corn, Oats, and Rye, quite freely), though closing weak....Provisions have been more active, but very unsettled as to values, closing for Hog products generally higher; Beef, weaker: and Butter and Cheese much lower. Eggs, which fell off considerably in price, closed more firmly. ....Cotton has been in more demand, and has advanced. ...Wool has been pressed for sale, resulting in increased depression, without stimulating purchases, which have been on a very moderate scale....Tobacco, Hops, Hay, and Straw, have been in quite moderate request at irregular figures....Ocean freights have been active, especially in the Grain and Provision interests, leaving off more firmly....Grain rates by steam to Liverpool closed June 13th at 8¾*d.* (about 16¼ cents) per bushel; Glasgow, 9*d.*; London, 9¼*d.*; Bristol, 9*d.*; Hull, 9¼*d.*; the Continent, 8½@9¼*d.*; by sail to Liverpool, 7@7½*d.*; London, 7@ 7½*d.* ₱ bush. Flour to Liverpool, by steam, 2*s.* 6*d.* (about 60 cents ₱ bbl.); by sail at 2*s.* 3*d.*; London, 2*s.* 3*d.*, and by steam, 2*s.* 6*d.*; Bristol, by steam, 2*s.* 9*d.*@3*s.*, and sail, 2*s.* 4½*d.*@2*s.* 6*d.* per bbl. Provisions by steam to Liverpool, 30*s.*@40*s.* per ton. Cotton by sail ¼*d.*, and steam ½*d.* ₱ lb. Grain, by sail, for Cork and orders, at 6*s.* per quarter (8 bushels), and to Continental ports, 5*s.* 6*d.*@6*s.* 10½*d.*; and from Phila. for Cork and orders, 6*s.* @6*s.* 3*d.*, and from Balt. for Cork and orders, 6*s.*@6*s.* 3*d.*

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions *for the month ending June 13th*, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
RECEIPTS.						
24 d's *this* m'th	341,000	4,312,000	3,617,000	646,000	307,000	811,000
24 d's *last* m'th	328,000	3,417,000	2,109,000	306,000	495,000	594,000
SALES.						
24 d's *this* m'th	413,000	5,409,000	4,815,000	741,000	229,000	1,973,000
24 d's *last* m'th	407,000	4,576,000	2,834,000	425,000	371,000	893,000

2. *Comparison with same period at this time last year.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
RECEIPTS.						
24 days 1878	341,800	4,312,000	3,617,000	646,000	307,000	811,000
24 days 1877	231,000	498,000	1,916,000	113,000	89,000	614,000
SALES.						
24 days 1878	413,000	5,409,000	4,815,000	741,000	229,000	1,973,000
35 days 1877	288,000	991,000	5,840,000	121,000	270,000	917,000

3. *Exports from New York, Jan. 1, to June 11.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Peas.*
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
'78..	1,091,000	20,151,000	10,104,000	2,107,000	1,434,000	732,000	255,000
'77.	816,494	3,676,909	7,725,024	496,525	291,497	72,800	148,944
'76.	983,469	10,828,697	6,134,527	280,954	8,000	98,922	376,791
'75.	784,838	9,989,147	5,515,451	97,487	165	51,900	218,582
'74.	957,383	15,083,546	7,021,900	448,103	100	57,585	236,916
'73.	526,562	3,241,919	5,298,419	20,323	19,236	14,646	38,300

4. *Stock of grain in store at New York.*

	Wheat.	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Malt.*
	bush.	bush.	bush.	bush.	bush.	bush.
June10, '78..	1,487,700	616,623	148,339	127,507	603,163	238,205
May 7, 1878..	748,196	268,020	73,229	267,576	570,298	258,327
Apr.15,1878..	1,370,081	641,648	106,375	396,861	837,378	293,424
Mar.11,1878..	1,689,371	410,484	114,390	620,145	1,090,897	275,765
Feb.11,1878..	1,674,035	774,470	208,846	831,973	1,415,633	318,079
Jan. 10,1878..	2,586,715	105,909	286,333	913,898	1,987,985	321,474
Dec. 10,1877..	2,841,982	1,724,229	309,977	854,787	1,579,052	338,849
Nov. 5, 1877..	984,374	2,845,802	166,949	266,629	1,170,739	298,282
May 7, 1877..	761,686	466,800	195,046	174,373	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	966,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	841,750	905,615	1,098,104	423,406
Dec. 11,1876..	3,110,288	3,285,554	218,841	873,810	1,182,922	512,041
Apr. 10,1876..	3,393,074	232,140	68,429	200,281	705,282	496,942
Jan. 10,1876..	2,598,200	668,982	100,741	325,191	1,060,300	307,486

5. *Tide-water Receipts at Albany, from opening of navigation to June 1st:*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Malt.*
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
'78..	1,000	5,271,800	3,960,400	425,800	221,800	813,900	72,200
'77..	100	363,800	1,282,300	106,200	76,000	211,100	62,300
'76..	6,000	2,499,300	606,000	182,300	81,300	777,400	129,000

New York Live-Stock Markets.

	RECEIPTS.				
WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
May 20	12,475	34	5,802	37,012	35,924
May 27	10,733	49	4,302	25,746	37,047
June 3	10,815	46	5,002	21,319	22,195
June 10	12,125	37	4,047	31,294	30,232
Total for 4 Weeks	46,195	166	19,413	115,071	125,448
do. *for prev. 4 Weeks*	41,734	205	16,729	88,283	131,309
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	11,548	41	4,853	28,768	33,862
do. do. *last Month*	10,433	51	4,182	21,570	30,442
do. do. *prev's Month*	10,055	70	1,566	19,380	29,745

Beeves.—The market for the past month has been very irregular, and trade has been dull. The weather has been very unpropitious. At the beginning of the month, the demand was light, and the receipts heavy, causing several hundred head to go over unsold from day to day, and a fall of a full ¼ c. ₱ lb. in one week, after considerable fluctuation. As the month passed, business became no better, and it closed at the lowest rates, with few buyers for poor stock, and no eager ones for good, and a generally lifeless feeling all round. The most active purchasers were the foreign shippers, who took all the best stock and a large portion of the second best. 29 car-loads of cattle were sold for shipment alive. The best grades sold for 10 c. ₱ lb. to dress 55 lbs. ₱ cwt., and 11 c. ₱ 57 lbs. The bulk of the stock offered, sold at 9 @ 9¾ c. ₱ lb. for fair natives; poor stock sold slowly at 8 @ 8¾ c. ₱ lb.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
May 20	8¼@11¾c.	9¼@10¾c.	10 c.
May 27	8¾@11 c.	9 @10 c.	9¼c.
June 3	8 @11 c.	9 @10½c.	9¾c.
June 10	8 @11 c.	9 @10 c.	9½c.

Cows.—There is scarcely any demand for cows, and the few arriving are held over, some, indeed, having been shipped back to the country, for want of a market at any price. There is no market value for cows just now, and quotations would be deceptive....**Calves.**—Veals have improved somewhat under the beneficial effect of light receipts with a good demand. Common to prime State veals sold at 5 @ 7 c. ₱ lb.; extra veals brought 7¼ c. No grassers were on sale at the close, but 3¾ @ 4¼ c. ₱ lb. may be quoted for these....**Sheep and Lambs.**—The large receipts gave heaviness to the market at the close of our report, after an irregular business through the month. The stock, however, was all worked off without material decline in prices, except for lambs, which fell off ¼ c. ₱ lb. Prices for sheep have ranged from $3.60 to $4.80 ₱ 100 lbs. Lambs of fair quality sold for 8¼ @ 7 c. ₱ lb., with 7¾ c. for the best. Wooled sheep brought 5 @ 5¼ c.; and a lot of Virginia stock ewes went at 3¾ c. ₱ lb., live weight. Dressed mutton went off slowly at 7 @ 8¼ c. ₱ lb., and lamb at 7 @ 12¼ c. ₱ lb. **Swine.**—The market has been better for hogs through the month, but closed easier as to prices. Live may be quoted at 3¾ @ 4 c. ₱ lb. without sales, and dressed sold the last day at 4¾ @ 5¼ c. ₱ lb.; pigs bringing 5 @ 5¼ c.

The Horse Market.—The steady demand for horses for city use, and also for export, makes it necessary that we should in future refer to the horse market in our

reports of live stock. After a brisk business, we note a falling off in demand and inquiry for all grades. Roadsters and trotters are getting to be out of the regular market, being animals of luxury, rather than of necessity in the present times. Foreign shipments for the week ending June 10th, amounted to 154 head, chiefly car-horses, for the London "tram-road" (car-routes). A number of good carriage-horses were shipped to England. Arrangements are being made to receive an importation of a number of pure bred French horses for Western breeders, which are looked for daily. Prices may be quoted as follows; light draft horses, poor, $60 @ $100 ₱ head; coarse, heavy horses, $90 @ $175; fair trotting roadsters, $200 @ $300 ₱ head; stylish carriage-horses are unsalable just now, and no quotations can be given.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	35.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ₱ ton, cargo H	56.00
do. do. rectified, per ton, 9.70 p. c.	69.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. do. do. Grain and Grass, ₱ 1,000 ℔s.	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal per ton.	42.00
do. do. do. extra fine do.	40.00
do. do. do. fine do.	38.00
do. do. do. medium do.	36.00
do. do. do. dissolved do.	42.00
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (98 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@2 c.
German Potash Salts (potash 12 to 15 p. c. p. ton	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @3½c.
Nitrate of Soda, per lb.	4 c.@4½c.
Sulphate of Ammonia (25 per cent.), per lb.	4½c.@5 c.
Dried Blood (ammonia 14 per cent) per ton	$45.00@50.00

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations can seldom be repeated, when those who desire information on a particular subject can so cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the American Agriculturist, containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.60 per volume.

Veterinary Education has a strong friend and worker in the American Veterinary College, New York. Its fourth annual report shows the Institution to be in a healthy condition. The live stock interests suffer enormous losses from lack of properly educated veterinarians, one of whom should be located in every county of America. There ought to be a score of such institutions as this, with a hundred students each, where now there is one. The American Veterinary College now stands on a footing comparing favorably with European institutions, and we wish it all success. A free scholarship is offered to each State Agricultural Society. For particulars address A. Liautard, 141 W. 54th St., N. Y.

The U. S. Entomological Commission.—When the last Congress authorized a Commission to investigate the ravages of the Western Locust, it was ridiculed by many papers, but the appointment of such men as C. V. Riley, of Mo., Cyrus Thomas, of Ill., and A. S. Packard, Jr., of Mass., indicated that the Commission meant business, and if any good could result from an investigation, the right men were set at it. Occasional Bulletins have been issued, giving to the public such facts as it was important to make known at once, and now the final Report of the Commission is in press. This, from the synopsis of its contents, which we have received, promises to fully justify the appointment of the Commission; and its value to the locust-ravaged States, and indirectly to the whole country, will far outweigh its cost. As the Government printing office sends out so many publications that no one wants, we trust that, now a really useful work is in hand, a liberal supply may be printed and distributed. When the Report itself comes to hand we may have more to say about it; suffice it at present to state, that the labors of the Commission show that the Locust is not an evil against which we are powerless. In this, as in other cases, a full knowledge of our enemy, its mode of life, and, so to speak, its strategy in warfare, suggest the tactics to be employed in combating it. The mere knowledge of the fact that but little is to be feared from the locusts after their first year in a new locality, there being abundant natural causes to prevent their increase, is worth all the Commission has cost. The principal means for their destruction to be employed by farmers, aside from the encouragement of natural agencies, are: the destruction of the eggs, which may be done by harrowing, plowing, and especially by irrigating; the driving (which is quite practicable) and burning, or crushing, or otherwise destroying young and wingless insects. Whatever destructive methods are employed must be directed towards the insect, either in the eggs or its larvæ or wingless condition, for when full-fledged but little can be done towards their destruction, though it is possible, to some extent, to drive them away from a particular field or locality. These matters, and many others, are discussed in detail in the Report, which is amply illustrated by engravings. The Report, so complete and exhaustive, is a credit both to the Commission and to the Government which authorized it.

"The Native Flowers and Ferns of the United States," by Thomas Meehan. Boston: L. Prang & Co.—The house of Prang & Co., so widely and favorably known for the excellence of their chromo-lithographs, has undertaken to publish a work with the above title. As a rule, we do not notice works "published by subscription only," and not put in the general book trade, and only depart from our custom in the present case in view of the enterprise shown in the undertaking, and to express our wishes for its success. The work starts with a first series of 24 parts, each part to contain four chromo-lithographs, with descriptive text, and all to form two volumes. Should this first series meet with success, we understand that it is intended to continue it with others. No systematic arrangement is followed, each part already issued containing flowering-plants of different families, and ferns. A work which will give portraits of our native plants has long been needed, and though several attempts have been made in this direction during the last half century, they have all, from one cause or another, come to a promature end. The present work has elements of popularity; its engravings, being colored, are showy and attractive, and the text gives only a brief scientific description of the plant, but is mainly devoted to such popular talk as the subject suggests. The first two numbers, as might be expected in a new enterprise, show to the critical botanist defects which will be avoided in future issues, and, on the whole, offer promise of not only an ornamental, but useful series of portraits of our native plants.

The New York Horticultural Society held its regular monthly meeting, at their rooms, on Tuesday, June 4th. The semi-annual exhibition being so near at hand, but little was shown except a few very fine strawberries and roses. Any disappointment on this account, was offset by the lecture on the "Summer Management of Large Fruits," by Mr. P. T. Quin, of Newark, N. J. The lecture, given without notes, occupied half an hour, and was replete with valuable information, clearly and tersely given. Among the points forcibly illustrated by Mr. Quin, was the necessity for thinning fruit, the need of cultivating the orchard, and the folly of planting *dwarf* trees (in which, by the way, he encountered strong opposition); he denounced dwarfs without qualification, urging that standards only should be planted in the orchard. The tree peddlers, the men with the wonderful pictures, he classed as the most unmitigated humbugs—asserting that they had done more to discourage fruit-planting, than all other causes combined, as they not only supplied miserable trees when they did send them at all, but they were utterly indifferent to the correctness as to variety of those sent.

Is it the Feed, or the Breed?—"H. C. B.," Lake County, Ind. It is not the feed that makes the difference in cows as to dairy qualities; although feed, of course, is needed alike by all. But what would make one cow fat, goes in another to make milk, and in a third to cream and butter. The same food that would make a good dairy cow yield 20 quarts of milk, and more than a pound of butter per day, would make a Shorthorn or Hereford fat for the butcher; and some cows will require much more food than others, to produce the same results. There are breeds, as the Dutch, and the Ayrshire, that have been for scores of years bred for the milk or cheese dairy, while the Jersey has been bred for a butter cow. Some native cows may be as good as any pure-bred, but out of 100 natives there may not be one such cow; while in 100 pure-bred cows there will probably be more than half of them equal or superior to the best native. A long course of breeding for a special purpose cannot fail to be more effective than haphazard breeding.

If H. M. B., of Waterbury, Ct., had looked on page 233 of the June number, he would have seen the reply to his question about "soot." Please look the pages through when desiring information, and you may save both yourself and the Editors much time.

Estimating the Weight of Animals, etc.—"C. & C. A.," Del Norte, Col. There are no certain rules for estimating the weight of animals or hay; these depend wholly upon the character of the things estimated, and which can only be judged of by an expert. A Texan steer could not be measured by the same rules as a Shorthorn or a first-class grade; nor could an ordinary hog be judged by the standard of a Poland-China or a Berkshire. So with hay; the rules are as various as the kinds of hay, its condition and the amount of pressure to which it has been subjected. The rules for hay in general use are as follows, for a ton:

Timothy a year in mow or stack	500	cubic feet.
Timothy from the bottom of stack	400	" "
Timothy newly stacked	700	" "
Clover stacked for some months	700	" "
Clover, new	900	" "
Timothy and clover, old stacked	600	" "
Timothy and clover, new	800	" "
Common meadow-hay, old	800	" "
Common meadow-hay, new	1,000	" "

These are approximations only, and would, at the best, only mislead a person who was not acquainted with the quality and proper condition of the hay. For cattle, the rules are just as arbitrary and uncertain, or more so, as the fineness of bone, "feel" of hide, amount of offal, age, and condition, are all items of consideration.

The Time for Cutting Wheat.—It is a fact first observed and made known by an English farmer and agricultural writer, Mr. John Hannam—recently deceased—and widely confirmed by many experiments during several years past, that the later stages of the ripening process diminish the proportion of flour and nutritive value of the wheat. The time to secure the best grain is when the kernel is still soft enough to be crushed, but is comparatively free from moisture, and breaks into meal between the thumb-nails.

Bean Weevils.—"N. L.," Bellevue, S. C. The history of this insect is, in brief, this: The weevil deposits its eggs in or on the beans when they are very young, and on the vine. The "worms," or maggots, feed on the bean, and when full-grown go into the dormant pupa state; they change to perfect beetles—for such the weevils are—about planting time. They appear to be more troublesome in the Southern than in the Northern States, but are increasing everywhere. Mr. White, in his excellent "Gardening for the South," advises to store seed beans in glass or earthen jars, closely corked, into each of which is poured a teaspoonful of spirits of turpentine. This, of course, affords no help for beans intended for food, as by the time the beans are ripe the weevil is usually full-grown and in the pupa state. If a whole neighborhood would burn their "buggy" beans, and procure a fresh stock of seed quite free from insects, they would be likely to escape the pest for a while, but so long as the insect is planted, so long may a crop be expected—and this kind of crop rarely fails.

Soil Analysis.—"H. L. B.," London, Canada. There is no "simple method of determining the proportionate constituents of soils." Chemical analysis can only be learned by long study and careful training; and only practised with accuracy by one constantly at work in the laboratory. To become a skilled chemist, one must have a thorough education at some good agricultural college, or scientific school.

Making Manure.—"A. A. R." When manure is "fire-fanged," or overheated, the most valuable portion—the nitrogen—is driven off, although the mineral elements remain. To prevent overheating, it is not required to continually fork over the manure, but simply to compact the surface of the heap, and to cover it with a thin layer of earth. Unleached ashes may be mixed with bone-meal, if care is taken to cover the mixture with plaster, or earth; and the action of the ashes will act upon the bones to reduce them to plant-food; but unless the earth or plaster is used, there will be a great waste of nitrogen from the bones.

Poisoning of Sheep by Wild Parsnip.—"E. A.," Gervais, Oregon, writes that he lost several sheep from poisoning by eating wild parsnips which grew in the pasture. The symptoms were dulness, ears drooping, eyes dull, often lying down, staggering gait, and avoiding the rest of the flock; death ensuing the second day. Others were saved by giving them a tablespoonful of saleratus dissolved in half a pint of warm water.—In nearly all cases of sheep poisoning,

either by parsnip (cow-bane), laurel, or other injurious herbs—in which the symptoms are generally as above noted—the immediate use of half a pint of sweet or linseed-oil will generally bring about a cure.

Harvesting Stock-Peas.—"J. H. C., Jr.," West Point, Arkansas. There is no difficulty in thrashing stock-peas. As harvested, they may be thrown on to a barn floor or a cleanly swept yard, and trampled out by horses; or they may be thrashed with the flail.

Large Yield of Butter.—"D. W. M. J.," Delaware Co., N. Y. 200 pounds of butter per year is a very fair yield for an ordinary cow. Many dairies do better than that by keeping selected animals and feeding high. A dairy in Illinois produces an average of 300 lbs. per cow, yearly, but each cow consumes 12 quarts of corn meal daily. It is not always that the high yields reported are profitable, but if we can turn 100 bushels of corn, costing about $35 in Illinois, into 300 lbs. of butter, worth $75 or more, there is profit in that. When much corn-meal is consumed, there is less hay eaten; the dairyman endeavors to induce his cows to eat all the food that can be turned into butter. Grade Jersey cows are the best butter dairy cows, especially for quality.

Leprosy in Poultry.—"J. F. S." The symptoms of this disease are as you describe them; a dry scale appears on the legs and spreads over the body; the fowls die in a short time, exhibiting dullness and mopishness during the sickness. We know of no remedy. It may be prevented by careful feeding and giving the fowls, at frequent intervals, some such alterative and tonic as "Imperial Egg Food." Fowls require not only grain, but some animal food, plenty of green vegetables, sulphur, lime, and abundance of gravel or coarse sand; and last, but not least, plenty of pure water. Cleanliness is also absolutely necessary to health.

Bony Tumor on a Horse's Leg.—"C.," Lake Crystal, Minn. When the periosteum or covering membrane of the bone is bruised or injured, and inflammation is set up, there is an increased circulation in the part, which often developes a deposit of bony matter. This causes an enlargement of the bone, which is incurable. The only remedy is to prevent the deposit by drawing off the products of inflammation to the surface by stimulating applications which produce suppuration. As soon as bone is formed, nothing can be done, but to leave the blemish, as lameness rarely results unless the seat of the injury be the interior of a joint.

Farming in California.—"J. W. W.," Henry Clay, Del. The methods of farming in California are different from those usual in the East. The climate and other circumstances of that State make it necessary to adopt special ways of doing things which are described in no book upon agriculture. Of course the principles of the art are the same there as everywhere, but there are few people able to carry into practice any special method of farming, from a knowledge only of principles. To farm in California, or any other peculiar location, one must see for himself how it is done.

A Malformed Udder.—"C. W. C.," Blue Earth Co., Minn. Unless the malformation of the udder interferes with the milking, we would leave it as it is. A communication might easily be made between the forward teats and the quarters of the udder to which they belong, by means of a probe, and inserting a long tube to keep it free until the walls of the new opening were healed; but as the milk is all drawn off by the hind teat, there is no need for the operation.

Tobacco Stems.—"C. F. W.," Louisville, Ky. The ash is almost one-fourth potash. They also contain a large percentage of nitrogen, and are valuable as a fertilizer. The best way to use them is in the manure heap, where they quickly decompose. They are also cut into bits six inches or so long, and placed in the hill, where they are speedily converted into plant-food.

Oil Stoves for Summer Use.—When living temporarily in the city many years ago, we found it very convenient to have a gas-stove. In hot days it often happens that fire is only needed to "boil the tea-kettle," and perhaps a single hot dish of vegetables, both of which can be easily accomplished with the gas-stove, and the fire in the range allowed to go out—to the saving of coal and the comfort of the household. Whether the gas-stove is economical or not, no one having to do with gas-bills can ever find out. When we moved to the country, beyond the reach of gas-pipes, we attempted to find the same convenience in oil stoves that we formerly had in gas-stoves, but soon gave them up. The oil-stoves of that day were crude affairs; they would smoke and give off disagreeable odors, unless constantly watched, and allowed but one article to be cooked at a time. Finding them unsatisfactory, oil-stoves were abandoned as more "plague than profit." But fifteen years bring changes in oil-stoves, as in other matters, and this summer a new trial was made. Noticing the advertisement of the "Hot Blast Oil Stove," in our columns, one was procured and put into service. For an oil-stove there are two essentials—safety is the first to be regarded—next, efficiency, or a sufficient supply of heat. So far as safety is concerned, we can only judge on general principles, and from the structure of this stove we do not see how with safe oil—and only such should be used for any purpose—an accident can occur. During the short time it has been in use, the stove in its simplest form has been found to both boil and bake in a satisfactory manner, and it promises to be a useful substitute for the range in disposing of a large share of summer cooking.

Basket Items continued on page 273.

Sundry Humbugs.

We sometimes wonder if it is possible to state a matter so positively and emphatically as to preclude all further questioning. If we have endeavored to do this with any one thing, it has been the Wall Street business; if there is any virtue in "line upon line," it should be manifest here; for we have said our say over and again, month after month. Notwithstanding all that has been said, letters continue to come, inclosing circulars, and making inquiries, some asking if we include the sender of that particular circular in our general caution. For obvious reasons we cannot particularize in this matter. We have taken considerable pains to look into this Wall Street matter, and have invariably found that the senders of these circulars were not known to the regular business men of the Street, and were in no case members of the Stock Board. We advise our friends, and this advice is that of men who have passed their business lives in Wall Street,

TO LET ALL SUCH SCHEMES ALONE.

Inquirers seem to be equally persistent concerning a Secret Service concern in Cincinnati. It seems rather strange that any one could seriously consider such a scheme at all. Do those who propose to enter the employ of such a concern—provided it were all that it pretends to be—reflect that they are placing themselves in the position of paid spies? In most communities, if a man were known to be a "detective," he would be so thoroughly despised and shunned by his neighbors that the small salary he might (?) receive would be a poor compensation for being an object of public detestation, and pointed to as a paid spy!

Inquiries concerning the

U. S. SECRET SERVICE COMPANY

came to the Police Department of Cincinnati in such numbers, that it was found necessary to have a printed reply. One before us, bears the signature of the Secretary of the Police Department, and says: "the U. S. Secret Service Company is regarded in Police circles as a *fraud*, and is one of several such that have been established here under the guise of legitimate business, and which, unfortunately, through defects in our laws, we cannot reach."—This will be a sufficient answer to the many inquiries about the U. S. S. S. Co., received from all over the country, even so far away as Oregon. Lately the inquiries come concerning the "American and European S. S. Co.," of the same city. Upon investigating this, we received word from one of the officials that the police authorities would print their opinion in the form of a circular, which would be sent us in a few days. It will be safe for anxious inquirers to wait awhile....In April last we devoted a large space to setting forth the operations of

CLARK & CO., "ADJUSTERS OF CLAIMS."

It will be remembered that the dodge was to send to the person addressed a slip of paper containing his name, and inquiring if the signature was his; with this show of care in identifying the person, was the announcement that he was "entitled to a certificate of gold mining stock valued at $500," etc. The full particulars of the operation will be found on p. 127 (April), with an account of what befell Clark & Co. These "adjusters" and *truth* have just one quality in common; both, though

"CRUSH'D TO EARTH, WILL RISE AGAIN,"

and the adjusters have "riz," and are dispensing that "mining stock," in blocks of $300, as impartially as ever. It probably occurred to Clark & Co. that every one might not want mining stock, even if it were that of the celebrated—not to say notorious—"Silver Mountain Co."

Being "adjusters," they could adjust one thing as well as another, so they add another branch to their business, and pass around jewelry, "assorted," mind you, in nice little $240 lots. But does any one suppose that Clark & Co. would send jewelry to the wrong man? Not much, for are they not adjusters! And they add just a small slip with a name upon it to the letter, and say, *so* cautiously, "We find the jewelry to be lawfully yours, if this is your signature." As we gave the mining stock letter in full, we will place on record this other choice specimen of

THE EPISTOLOGRAPHY OF ADJUSTMENT.

DEAR SIR—A claim for $240 worth of assorted Gold Jewelry has been placed in our hands for adjustment. From investigation, we find the Jewelry to be lawfully yours, if this is your signature on the enclosed slip of paper. Return the slip to us, so we can compare it with your signature, and if found to be the same, we will send you the Jewelry. The money you sent was invested on the general average plan with the Manufacturing Jewelers' Association, which resulted in securing for you the Jewelry referred to. Our charge for adjusting the matter is 5 per cent, which is $12. Please send us that amount, or, if preferred, you can pay it at the Express Office, after you have examined the Jewelry.

Resp'y CLARK & CO.

There may be people who will be caught in such a trap; but they will find very little sympathy, as, to get what is alleged to be worth $240 for $12, they become partners in a lie by assuming as true, the assertion that they had sent money, while they *know* it to be false. What a very crooked and dirty business it all is, isn't it, Clark & Co., for you, and also that for the great instigator and prime mover behind you. In the Article in April last, we stated, that Clark & Co., and their twin-brothers, Keyes & Co., and Russell & Co.—what a co-operative concern it is—could receive

NO MORE MONEY THROUGH THE MAILS,

except at a risk; it was somewhat surprising to see them starting up afresh within a few weeks. Upon inquiry at the proper quarters, we learn that the exclusion still continues, and that the few simpletons, or knaves, who forward them money, must do it through the Express. At least one reader is disposed to heed our injunction.

"FARMERS, BE CAREFUL WHAT YOU SIGN."

A farmer in Bergen Co., N. J., asks advice about investing in an invention, which will, among other remarkable things, "enable any one to produce New Potatoes, ripe Fruits, Berries, etc., all through the winter months."—The probability or possibility of the process, we do not now discuss; the point is, shall the farmer sign the contract? We say *most decidedly not*, as it binds him to grow "not less than three acres of potatoes, according to the process of the invention, each year for seven years in succession," to sell the potatoes, and to pay over to the inventor one-fourth of the proceeds, without deducting for expenses. It is safe to say that no possible advantage to be gained by the use of any process or invention can warrant the making of any such contract. In the agreement, the invention is spoken of more than once as a "patent." If a "patent," why the solemn agreement as to secrecy? as one can always get a copy of any patent for 50 cents [illegible]. The Editor of a flourishing paper in Illinois, sends us one of the many sheets or catalogues devoted to advertising what they call "Novelties," but which are mainly

TRASHY AND FLASHY ARTICLES,

many of which are worthless, and others worse than worthless, as they are absolutely pernicious. This Editor is startled at the abundance and wide dissemination of the "cursed advertisements," as he properly calls them, and the fact that mere children of both sexes, of unsuspecting parents are known to have concealed in their pockets the vile articles advertised. He brings these to our notice, and hopes we will "devote a little attention to the matter." "A little attention!" good friend; we have devoted much "attention" to it these many years, and could tell more about it in ten minutes than you are likely to learn in a year. We have considered it in all its bearings, and are thoroughly impressed with its importance; but the trouble is, that it does little good to denounce such things on general principles; to be effective, we must *name the man* who offers corrupting books, devices, and appliances, and this would be the very thing that these chaps would have us do. They would get advertised in the very quarters, in the virtuous families of the rural population, the very places which they can but occasionally reach by their ordinary methods. So long as professedly decent papers publish such advertisements as the "Toll-gate," without learning upon what kind of a road that Toll-gate stands (it leads directly *downwards*, and is very miry), and other such traps for the unwary, stuff of this kind will get sufficient publicity without aid from us.

THERE IS BUT ONE SAFEGUARD

against this evil, and that rests with the parents. How many parents so treat their children as to have their per

fect confidence? We put the question directly to our Illinois editorial friend: was your father your best friend, the one to whom of all others you would first tell of some success, and to whom you would first go for comfort in some boyish trouble, or for advice when in doubt? Probably not, but it matters little now—but it matters greatly with *your own* boys whether their relations to you are such that they can have no secret, or think it necessary to conceal anything from you. The evil complained of is one that affects the peace and purity of the home circle, and it is just there that the remedy is to be found. Isn't it so, brother L.?....We have been expecting it, and it has come at last! The opportunity was so good that we wonder it has not been seized before. Here it is:

"A TIMELY WARNING—EIGHT HUNDRED TONS OF DEADLY POISON!"

is the heading of the hand-bill. Of course, this means Paris Green. And the account of the horrible things that may happen, and a general statement—with no particulars—of what has happened, is enough to make one give up potatoes for the rest of his life. But what good will it do to stop eating potatoes, and cease using Paris Green at this late day?—Not a bit—the deed is done—the world is in a bad way!—If it be any comfort to know our fate, read!—"Poisoned Blood is to-day coursing through the veins of thousands of people who do not, as yet, know the fact—but the awful truth will burst upon them by-and-by."—Now, where are we; or, rather, where shall we be when that bursting bomb shell bangs us to ballyhack?—it is rather hard on the thousands of people who do not know it. After "piling up the agony" until it becomes actual mental torture, we become anxious, and we begin to wonder if it wasn't the potato that brought all the evil into the world, instead of the historical apple (*a pomme de terre*, instead of a *pomme de l'ai*, so to speak). Let any one read this hand-bill, and the world will look differently to him. The boasted triumphs of our civilization, our telegraphs and phonographs, our telephones and microphones, become as nothing. Why have we graphs and phones, why Paris Expositions and Commissioners of Agriculture, if, when that "awful truth will bust," we are all at once to go to the bowwows! But out of all this blackness of darkness is there not a single ray of hope; has not our dark cloud just a bit of silver lining (or green-back—we don't mind, legal tenders being worth 99 cts.)? This despondent view comes of reading the thing only half through.—A "ray." It gives us a whole sunburst of hope. We read:

"BUT IT MAY NOT BE TOO LATE."

See how gently he lets it on—as Pat fired the cannon "aisy," so as not to hurt Mike, who held the iron pot over the nozzle, that the ball might not be lost—"May not be too late to use a powerful blood remedy, such as,"

"SUCH AS P * * * * 'S PILLS."

Hear them:—"We appeal to every lover of his race to spread the information contained in this hand-bill, with all possible haste"—which *we* proceed to do—in our own way. It is perhaps not just the way our down East friends would like, but it is the best we can do. "Let every Minister of the Gospel take it for a text and preach from it. Why not?"—"Why not?"—Well, the only reason that occurs to us just at this moment, is, that Ministers of the Gospel are not, as a general thing, unmitigated donkies, and while they may show a want of taste, they have texts in a work which has answered tolerably for over 1800 years, and they haven't got to preaching from hand-bills yet.

Useful Additions to Our Rural Literature.

It is with pleasure that we announce that the already comprehensive list of rural books, published by the Orange Judd Company, is about to receive important additions. Those in the greatest state of forwardness are here noticed:

Talks About Manures, by Joseph Harris, M. S., Moreton Farm, Rochester, N. Y., author of "Walks and Talks on the Farm," "Harris on the Pig," etc., is the title of a new work now in press, and shortly to be issued by the Orange Judd Company, 245 Broadway, New York. In the series of "Walks and Talks on the Farm," and later in "Talks About Farm Crops," Mr. Harris has become so well known to the readers of the *American Agriculturist* that he needs no introduction to them. In the above-named series, he adopted a colloquial style, which, while it is too diffuse for the close student, is popular with many readers.

The assertion "I have done so and so," will arrest the attention of many, where the abstract statement that "so and so has been done," will be passed unnoticed save by few. The writer, who speaks in the first person, at once places himself on friendly terms with his reader, who, feeling that the teachings are for his special benefit, gives them a careful attention that he would withhold from the same matter presented in the usual form. In "Walks and Talks," the author succeeded in conveying and in popularizing scientific teachings, and in presenting to the ordinary reader the results of scientific researches in a pleasant manner. One marked and useful feature of "Walks and Talks," etc., is the introduction of "The Deacon," a plain, old-fashioned farmer, slow to adopt new ways, but of sufficient intelligence to accept new views and methods when convinced of their value. The Deacon, by propounding such questions, and presenting such objections to scientific teachings as would occur to the common-sense farmer, became at once popular with the reader, as he usually proposed just such views as would occur to the average farmer, and put the author on his defence. Besides the Deacon, the Doctor and the Squire gave variety to "Walks and Talks." In "Talks on Manures," the readers of the author's former writings will meet his old friends, the Deacon, the Doctor, and the Squire, to which are here added young Charley, who contributes his share of the Talking. These persons go over the whole ground, from considering the general and important question "What is Manure?" through the methods of making, keeping, and applying it, to the choice of particular manures for special crops. The author makes great use of the experiments on manures by Lawes and Gilbert, at Rothamsted, England. In this he is justified not only by the intrinsic value of the experiments themselves, but by the fact that he was himself at Rothamsted when a large share of these were made. Having a personal relation to this important series of agricultural experiments, his accounts of them possess an interest which the bare results, as presented in tables, do not convey, and while the tables are given, the author's comments on them increase their interest and value. We may add here, that the most important tables recording the Rothamsted experiments, are presented in full; these are not, to our knowledge, accessible in any other American work, and these alone will be to many worth the price of the whole book. It is not often that the results of scientific investigations are presented in a manner so thoroughly popular, there being nothing in the work that may not be understood by the intelligent farmer or by his boys. To the author's large circle of readers we have no need to say more about the work—to others, we can commend it as presenting the teachings of modern science as sustained and illustrated by the best modern practice. Ready shortly.

Winter Greeneries at Home, by Edwin A. Johnson, D. D., author of "Half Hour Studies of Life," "The Live Boy," etc. The title of this work is fortunate; had the author called it "Window Gardening," it would have met with a doubtful welcome. In all our horticultural literature, there are no works so thoroughly unsatisfactory as those on window gardening. They are beautiful works to look at, being illustrated with fine engravings of plants, which "might, could, or should," but somehow never "*would*" flourish in the window-garden, in fact made up by persons with no practical knowledge of the subject. These works recommend a large share of the ordinary greenhouse plants, for window culture, while all who have had experience know that but a few of such plants are suited to the purpose. The author of "Winter Greenerics" is a clergyman, who for several years has found recreation in beautifying his study with plants; his work resulted in so much enjoyment to himself and his friends that he has been induced to tell what he did, and how he did it, in a little work, with the above title. "Winter Greeneries" implies, what all with much experience will admit, that the first and main thing to be aimed at in window-gardening is an abundance of *green*. Green vines, green trailers, and erect plants, with foliage of various shades of green, are in themselves always pleasing, and are within the reach of every one who has a window, no matter how unfavorable the aspect, or how unsuited the room to plants in general. If this work did not go a step further than to show how to accomplish this, it would be most welcome, but the author, after many trials, has learned that it is possible to add some flowers to the green, and gives a list of the select few that, if his directions for their treatment be followed, may be depended upon for winter bloom. Some may be disappointed that so few flowers are commended, but this, to our mind, is the most valuable feature of the book. In window-gardening, it is not what we would like, but what will like us—or rather our surroundings, that must direct our selection, and in this the work is an eminently safe guide. The book is not a mere dry set of directions, but its teachings are presented in the pleasant form of letters to some young ladies, who, having witnessed the author's success, have asked his instruction, and this allows a genial personality to pervade the work, and makes it withal readable, as well as instructive. It must not be inferred from this that the teachings are the less concise and practical; having years ago gone over almost every step of the same ground, we can safely commend "Winter Greeneries" as the best guide to successful winter-gardening, as suited to American homes, with our peculiar domestic surroundings, that we have seen, and we feel sure that those who follow its teachings will reach a satisfactory measure of success. The work, which is now in press, gives engravings of the author's study, and other illustrations.

The Paris Exposition.

The International Fair now being held in Paris is worthy of the versatile, enterprising, industrious, economical French people. The *American Agriculturist* is represented at the Exposition, by Mr. George Houghton, who may have something to tell us a little later. We give below a partial list of the leading American exhibitors:

Auburn Man'fact'g Co., Auburn, N. Y., Agricultural Tools.
Adriance, Platt & Co., New York, Mowers and Reapers.
Aultman, C. & Co., Canton, Ohio, Agricultural Machines.
American Watch Co., Waltham, Mass., Watches & Move'nts.
American Fence Manufacturing Co., New York, Fence.
Allen, R. H. & Co., New York, Warehouse Trucks.
Bay State Rake Co., Winchendon, Mass., Hay Rake.
Baker, Walter & Co., Boston, Mass., Chocolate.
Bickford & Huffman, Macedon, New York, Seed Drill.
Baker, H. J. & Bro., New York, Chemicals.
Browne & Sharpe M'f'g Co., Providence, R.I., Machine Tools.
Brooks, Ezra, Hartford, Ct., Automatic Pump.
Bailey Wringing Machine Co., New York, Wringers.
Blake Crusher Co., New Haven, Ct., Stone and Ore Crusher.
Cortland Wagon Manufact'g Co., Cortland, N. Y., Wagons.
Chadborn & Caldwell, Newburg, N. Y., Ag'l Implements.
Case, J. I., Racine, Wis., Agricultural Tools.
Crozier, L. S., Williamsburg, Kan., Cocoons & Reeled Silk.
Coates, A. W. & Co., Alliance, Ohio, Grain Rake.
Deere & Co., Moline, Ill., Plows.
Douglas, W. & B., Middletown, Ct., Pumps.
Dederich, P. K. & Co., Albany, N. Y., Hay Press, Horse Power Bale Machines.
Eagle Mowing Mach. Co., Albany, N. Y., Mowers & Reapers.
Fairbanks, E. & T. & Co., New York, Scales.
Farmers' Friend M'f'g Co., Dayton, Ohio, Grain Drill.
Farquhar, A. B., York, Pa., Threshing Machines, Horse Plows, Rakes, etc.
Gale Manufact'g Co., Albion, Mich., Plow and Hay Rake.
Gillott, Jos., & Sons, New York, Steel Pens.
Globe Horse-Shoe Nail Co., Boston, Horse-Shoe Nails.
Howe Scale Co., Rutland, Vt., Scales.
Hill's Archimedean Lawn Mower Co., Hartford, Ct., Lawn Mowers.
Ivers, F., Cambridge, Mass., Buggies.
Johnson Harvester Co., Brockport, N.Y., Mowers & Reapers.
Lovell, Jno. P. & Sons, Boston, Mass., Air Guns and Pistols.
McCormick, C. H. & L. I., Chicago, Ill., Mowers & Reapers.
Mason & Hamlin Organ Co., New York, Organs.
Massey, G. B., New York, Revolving Boot-heel.
Nason Manufacturing Co., New York, Universal Pump.
Nonotuck Silk Co., Florence, Mass., Spool Silk.
Osborne, D. M. M'f'g Co., Auburn, N. Y., Mowers & Reapers.
Randolph, Theo. F., New York, Ditching Machines.
Remington, E. & Sons, Ilion, N. Y., Fire Arms.
Snyder & Bro., New York, Steam Engine.
Stratton & Cullom, Meadville, Pa., Hay Loader.
Stanley Rule & Level Co., New Britain, Ct., Rules & Levels.
Speer, Alex. & Sons, Pittsburg, Pa., Plows and Cultivators.
Studebaker Bros., South Bend, Ind., Wagons.
Stoddard, J. W. & Co., Dayton, Ohio, Ag'l Implements.
Sharpe Rifle Co., Bridgeport, Ct., Fire Arms.
Taylor Man'fact'g Co., Westminster, Md., Portable Engines.
Trump Bros., Wilmington, Del., Scroll Saws.
Taylor, B. C., Dayton, Ohio, Hay Rake.
U. S. Wind Engine & Pump Co., Batavia, N. Y., Windmills.
W. A. Wood Mowing & Reaping Machine Co., Hoosick Falls, N. Y., Mower and Reaper.
Wheeler & Wilson M'f'g Co., New York, Sewing Machines.
Warder, Mitchell & Co., Springfield, Ohio, Mowers & Reapers.
Withington & Cooley M'f'g Co., Jackson, Mich., Garden and Farming Tools.

Treatment of Working Oxen.

These patient, useful, animals are much abused, as a general thing. A smart pair of oxen, well-trained, and well-fed, can do as much plowing and other work on a farm, as any horses that I have ever owned. What I mean by "well-trained, and well-fed," is to give them the same care that you give horses. Instead of leaving them standing in the yoke beside the fence or barn, to eat their dinners, put them into the stable and make them comfortable. Feed lightly in early spring, and when they have come into full working condition, give a bushel of ground oats every day, to a pair weighing 2,800 to 3,200 lbs. I consider ground oats much better than the whole grain. Many farmers have an idea that any one can drive oxen, but as it is most important with them, as with all animals, that they should be treated with uniform kindness, I think the best man on the farm should do this. Never drive with a club or goad, but with a whip, and seldom use it. Oxen can be guided by the voice. I trained one pair that would stop instantly at the word "whoa," start at one cluck, and at a second decided cluck, move off into a trot. Be firm, but kind, and you will find them returning affection; showing it pleasantly if any is manifested for them. Oxen can be made to grow, while working daily. It is economy to

keep two pair for doing the work that one pair can accomplish, by being on the go from morning until night, that neither may be overworked. I make each pair of oxen, on my farm, gain from $50 to $100 a year. If cattle can not be well fed, they ought not to be kept. I have enjoyed and been interested in oxen from boyhood, and on my father's farm, broke and trained many a pair of steers. Always bear this in mind, that animals are very apt to catch the spirit and temper of their masters, therefore try to keep good-natured when directing and controlling them.

B. C., *Bennington, Vt.*

Drilling Grain.

For many years, the only method recognized by leading English farmers, as suitable for planting grain, has been the sowing of the seed in rows by means of a drill; and the system is now coming into prominent use by our own grain-growers. That corn in hills will produce more grain than if sown broadcast, as for fodder, seems a needless statement to make, so well is it known. Why does not the same principle hold with regard to wheat and other small grains? It does, and only needs trial, to be as generally accepted. The accounts of the yield obtained from wheat drilled and cultivated like corn, almost surpass belief—one cultivator in California reporting the product of an experimental plot at the rate of 175 bushels per acre. It is well known that the yield of wheat-fields where drilling is practised, with the proper fertilization and culture, is often double, and even many times that obtained in ordinary practice. The principal difficulty in the way

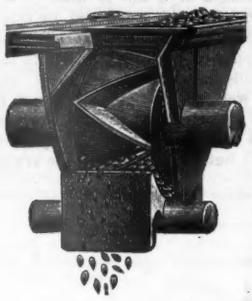


Fig. 1.—DISTRIBUTOR.

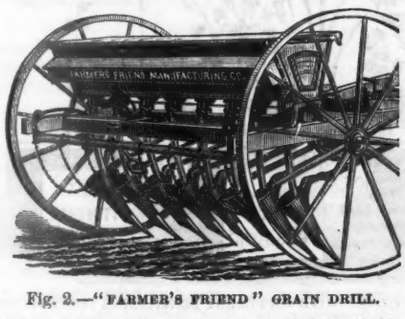


Fig. 2.—"FARMER'S FRIEND" GRAIN DRILL.

of drill-planting in the past has been the lack of suitable machines. Now, however, there are several excellent ones, among which is the "Farmer's Friend Grain-drill," made at Dayton, O. The working parts of this machine are shown at fig. 2. It is made to sow both fertilizer and seed at the same time; and not the least of it is the arrangement by which it becomes a hoe when desired. This matter of hoeing grain is of as much importance as the drilling, and is to be compared with the hill-planting and cultivation of Indian corn. Figure 1 indicates a section of the arrangement for feeding the seed into the drill. The diagonal ribs distribute the grain very evenly. This drill can be made to sow corn, peas, beans, turnips, and mangolds, as well as the small grains, and also to distribute any fine fertilizer.

Bee Notes for July.

BY L. C. ROOT, MOHAWK, N. Y.

In many locations the early part of the season has been very unfavorable to bee-keeping interests. The month of May, in Central New York, was cold and wet, preventing bees from securing the usual early honey from apple and other fruit blossoms. In most other parts of the State, bees have suffered severely. April was favorable, and many colonies were strong enough, and would have swarmed during fruit blossoms had the weather been propitious. At this writing (June 3d), colonies are not in so good condition as they were a month ago. I have found it necessary to feed my own bees regularly each evening to induce them to continue breeding, and in many cases to prevent starvation. In 1874 I was obliged to continue feeding until after the middle of July. I had 100 colonies, and many of them did not have a pound of honey until basswood commenced blossoming on the 20th of the month. I had fed so regularly that they were kept constantly breeding, and were very populous. Basswood, then, afforded an unusual flow of honey, and during the balance of the season I secured an average of 100 lbs. from each stock, while many who took little note of the early scarcity of honey failed to secure even a moderate yield. In most northern sections, the heaviest product will be secured during the present month. Boxes should be removed promptly as fast as filled and well sealed, and their places supplied with empty ones. If extracted honey is desired, an extra number of empty combs must be supplied, from which the honey may be thrown with the honey extractor as fast as filled. Box honey should be kept in a cool dry place. Extracted honey may stand in a warm room. Avoid the very common practice of allowing over-swarming. If movable combs are used, and swarms are allowed to issue naturally, open the hive after the first swarm issues, and clip off all queen cells *except one*, which will prevent after swarms. If *all* are removed, and a laying queen introduced, it will be found to be the preferable method.

QUESTIONS. — "What is Grape Sugar?"—"What is Glucose?"—"Is there anything objectionable or deleterious in their use, in connection with the production of honey?" ANS. — Glucose and grape sugar are the same thing, and are obtained from grapes, honey, starch, and other articles. As to the use of the ordinary grape sugar, which is used by brewers, and can be so cheaply obtained, for feeding bees, or any purpose, my experience has not been favorable. So far as the wants of the bees are concerned, I consider nothing better than pure honey. When feeding to stimulate breeding, if there is a scarcity of honey there is much danger of inducing robbing. For this reason, I prefer to feed a syrup, as heretofore directed, made of 4 lbs. of sugar to 1 quart of water. This answers every purpose in feeding the bees; besides it attracts pilfagers very much less than honey.

WORKER AND DRONE COMBS.—"Will you give such information as will enable a novice to distinguish worker from drone combs?"....I find that very many have trouble in readily distinguishing the different kinds of comb. It is a matter worthy of earnest attention, as in practical operations it is very essential. Figure 1 is an illustration made by the late M. Quinby, from a piece of comb, showing the different sizes of cells and the bees that are reared in them, which is very true to nature in the form of the cells and size of the bees. The small cells, on the right hand side of the engraving, are worker cells. It will be found by measuring, that there are five of these cells to the inch, or 25 to each square inch, on each side of the base. The eight small bees are the workers reared in these cells. On the left of the engraving are shown the drone cells, which occupy about 4½ to the inch, or about 20 to the square inch on each side of the base. The large bee at the bottom is a good

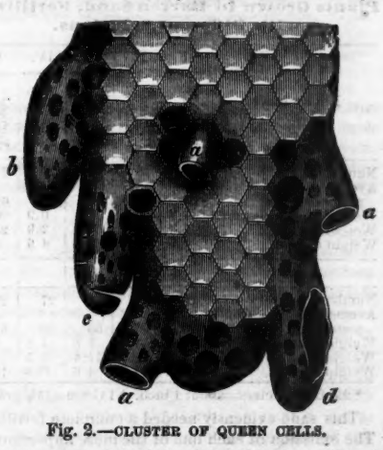


Fig. 2.—CLUSTER OF QUEEN CELLS.

representation of the drones hatched in these cells. Although not included in the question, it may be of interest to some, to state that the queen, shown in the center, is hatched in a cell of entirely different form and appearance, as shown in figure 2, which represents several queen cells (*b, d, e*) attached to a piece of worker comb.

About Medical Matters.

As it is hardly just to class these as "Humbugs," the frauds as well as the well-meaning, we treat them under a separate head. Some ten years ago we set down

ONE DOCT. R. H. BURNER,

from the reading of his stupidly ridiculous circular, as a chap to be avoided. It appears that said Burner has recently been at work in and around Hartford and New Haven, Conn. He was prosecuted awhile ago for some reason, but escaped through an imperfection in the indictment. But for all this, Burner does not escape pun-

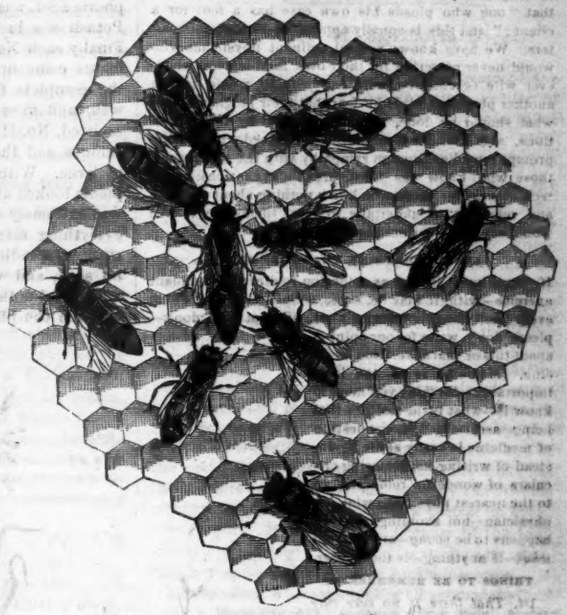


Fig. 1.—DIFFERENT SIZES OF CELLS.

ishment; the "Hartford Courant" and other papers are after Burner with such a series of regular *scorchers*, that he will not find Connecticut a profitable field for future operations....A subscriber in Vermont sends a circular of somebody's "Restorative Remedies," for our opinion. The circular has four closely-printed pages. We read on the very first line, after the heading: "Dear Sir—We enclose you Dr. ——'s prescriptions;

"A CERTAIN CURE FOR"—

and we had no need to read any farther. Whoever promises "certain cures," takes a contract that *he can not fill*. Medical men know of but one "certain cure." So far as is known, sulphur has proved to be a "certain cure" for the *Itch*—and that is not in the true sense of the word a disease—it is merely an eruption caused by the presence of a minute insect, to which, as to many other insects, sulphur is fatal....Frequent inquiry is made of us as to the efficacy of

ELECTRIC BELTS AND CHAINS,

which are now being advertised as generally as they were 20 years ago. There are questions much more important than that concerning the electric appliances themselves, which each one who writes us, should settle first.—"What is the matter with you?"—"Who besides yourself, has determined upon the character of your disease?"—"Who has decided that electricity is the proper remedy in your case?"—"If electricity is prescribed by a competent physician, what one of the several forms in which it may be applied, has he advised?"—If the "Pulvermacher," or any other chains, are thus prescribed, get them. If any other appliance, get that. We will not do or say anything to induce any persons who are really ill

TO TREAT THEMSELVES,

nor can we encourage those who imagine themselves ill, to putter with electricity or any other remedial agent. The great trouble with all this medical business, is, that persons who do not know whether their liver is inside of the stomach, or outside, [indeed, we once knew of a quack doctor who certified that a woman had vomited up *a part of her liver*—which she could no more do, than throw up her great toe], who have not the slightest idea of their own anatomy—the action of the organs in health, and what may result from their disease—the great trouble is, we say, that such persons assume that so and so is the matter with them, and then write to us to ask if this or that is good for them. Frequently they write that they have spent $5, or $10, on some stuff "warranted to cure," and getting no relief, they wish us to expose the maker of the nostrum as a fraud. Such people are all beyond our

help. No matter what we say, they will go on doctoring themselves and trying one advertised thing after another. Every sensible physician knows that it is a comparatively easy matter to *treat* most kinds of disease, but that it often requires all his skill

TO FIND OUT WHAT IS THE MATTER,

or to make a proper diagnosis. All these secret remedies do harm, as they excite the imagination of the weak and nervous. Their circulars enumerate just the symptoms and feelings that those who are "generally out of sorts" are sure to have. The reader finds that his "case is described exactly," and it follows, as a matter of course, that the stuff is taken. Lawyers have a maxim, that "one who pleads his own case has a fool for a client;" and this is equally applicable in medical matters. We have known several eminent physicians who would never prescribe for their own families, but whenever wife or children were seriously ill, would call in another physician—this for fear that their judgment as to what should be done, might be warped by their affections, and that they might be restrained from using prompt remedies through sympathy with the sufferer. If those who know the most, are thus cautious, what recklessness for those who know nothing about sickness and remedies to undertake to treat themselves! We would say in all seriousness to those who

ARE ILL, OR THINK THAT THEY ARE:

If your ailment is such as attention to diet and abundant exercise—with, it may be, some simple tonic, of which every family has its favorite kind, will not cure, don't—please don't, write for our opinion about this or that advertised medicine. Medicine is of the least importance—*the thing* you need to know is—what is the matter; that being ascertained, the question of medicine is easily settled. Instead of writing us, enclosing circulars of wonderful remedies, go to the nearest physician, who *is* a physician—not avoiding one who happens to be *young*—and find out *what*—if anything—is the matter.

THINGS TO BE REMEMBERED.

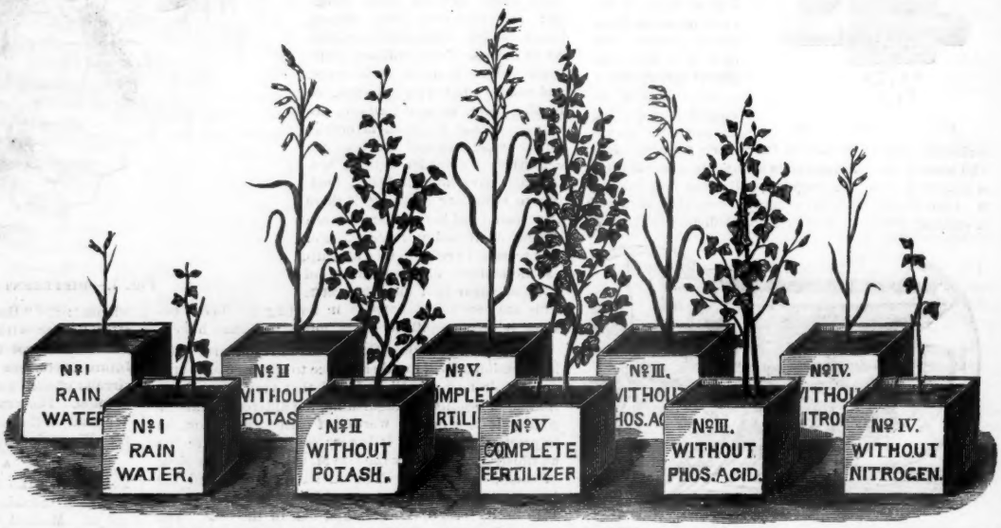
1st. That there is NO *sure cure for* ANY *disease.—2d. That you can not possibly judge for yourself, or from what appear to be your symptoms, just what is the matter with you.—3d. That* ANY *"Doctor" who attempts to prescribe for you from your own description of your symptoms, is surely an unreliable quack.—4th. That similar symptoms are exhibited or felt by you, so far as you can judge, for very different diseases, and those requiring very different treatment.—5th. That different conditions of the system, of temperament, etc., in different persons, require very different medicines or treatment for the same disease, and this applies to sight and hearing as well.—6th. That medical advertisements, and circulars, and pamphlets, are mainly successful, by detailing certain signs and symptoms* IN SUCH A WAY *that the reader, if at all nervous or credulous, is quite apt to apply the descriptions to himself, or herself, and thus hundreds of thousands of people are led into doing, and really making themselves sick, when they would have got well if they had let the medicines alone.—Hence, 7th. Never read any medical advertisements, or pamphlets, or circulars, whatever. You never find them advertised in* THIS *journal, though we could get tens of thousands of dollars every year if we would admit them.*

Science Applied to Farming.—XLIII.

Natural Strength of Soils, and Economy in Making Use of It.

Every one who has traveled through that part of Connecticut will remember the barren plains just north of New Haven. Large portions of this soil, if such a dry, drifting sand may be called a soil, are entirely devoid of vegetation. It comes nearer my idea of a desert than any other territory I am familiar with in this part of the country. With the aid of Dr. J. W. Alsop, of this place, and Mr. W. Balentine, of the Experiment Station, the experiments referred to were made on portions of the poorest of this sand. Fifteen wooden boxes, each one foot square, were filled with the sand and arranged in three series of five each. The boxes of each series were numbered I., II., III., IV., V. In the first row buckwheat was sown; in the second oats, and in the third beans. To fertilize these, several solutions were prepared by dissolving the proper chemical salts in water. One of these contained all the materials which plants require for their food from the soil. This "normal solution" was the same as is used in the experiments in "water culture," previously described, and was applied to No. V. of each series. Another solution, containing the same ingredients, except that nitrogen was omitted, was used to water the plants in No. IV. A solution, with everything but phosphoric acid, was applied to No. III. of each series. Potash was in like manner omitted from No. II. Finally each No. I. received only rain-water. The plants came up, and grew. Those supplied with the complete fertilizer, No. V., were healthy, did well, and gave a fair crop. Where potash was omitted, No. II., the plants were about as tall, but thinner, and the yield of seed was only about half as large. Without phosphoric acid, No. III., the plants looked about as well, but the amount of seed was extremely small. Where nitrogen was left out, everything else being supplied, the plants were stunted, spindling, and sickly. They yielded almost no seed, and were in fact no better than those which had nothing but rain-water.

When the plants were ripe they were harvested, the roots being freed from sand by careful washing, and the different parts measured and weighed. The picture represents buckwheat plants of average size, from each lot. The table below gives measurements and air-dry weights of buckwheat and oats:



EXPERIMENT WITH BUCKWHEAT AND OATS GROWN IN BARREN SAND, AND SUPPLIED WITH DIFFERENT FERTILIZING INGREDIENTS.

Plants Grown in Barren Sand, Fertilized with Different Solutions.

	I.	II.	III.	IV.	V.
BUCKWHEAT.	*Rain Water.*	*Without Potash.*	*Without Phosphoric Acid.*	*Without Nitrogen.*	*Normal Solution.*
Number of Plants	25	25	24	24	24
Average height. Centimeters.*	30	60	60	30	61
Weight of seed. Grams.†	1.2	13	4.4	0.9	20.4
Weight of straw. "	4.9	14.1	8.7	2.9	25.4
Weight of roots. "	4.6	6.6	2.4	4.6	5.4
OATS.					
Number of plants	25	25	24	27	27
Average height. Centimeters.*	20	55	50	39	61
Weight of seed. Grams.†	0.3	4.5	1.3	1.3	4.2
Weight of straw. "	1.8	14.9	11.4	5.5	34.5
Weight of roots. "	2.3	7.7	4.6	3.9	17.3

*2½ Centimeters=about 1 inch. †1 Gram=15½ grains.

This sand evidently needed a complete fertilizer. The omission of each one of the more important ingredients of plant-food brought the yield down, but in very unequal proportions. In lack of potash, everything else being supplied, the crop suffered badly. Leaving out phosphoric acid injured it still more; while, without nitrogen, even though everything else was furnished, the growth was no better than with rain-water. This soil could supply considerable potash and some phosphoric acid, but its stock of available nitrogen was extremely low.

This is exactly what was to be expected. This sand is composed of particles of stone of different kinds, which contain more or less of the mineral ingredients of plant-food: lime, potash, phosphoric acid, etc., much more than most people suppose. But there is scarcely any vegetable matter to supply nitrogen, or to hold it if it were supplied. What this soil wants first of all is water. Next to that it needs vegetable mould to hold the water it gets, to supply nitrogen, and to help it gather nitrogen from the air. Given moisture and the vegetable matter that muck, green crops plowed in, and roots could furnish, and it might supply a portion of the mineral elements of plant-food for a considerable period.

The natural strength of a soil is what it has to fall back upon after being reduced by cropping. It is practically constant, and depends upon the chemical and physical processes, that with the aid of air and moisture, warmth and frost, and growing plants as well, are continually going on in every soil. These agencies are active whether the soil is cultivated or not. Proper tillage aids them wonderfully; but still, without it, the available stock of food accumulates so long as less is removed than is resupplied. It is in this way that fallow ground recuperates, and that virgin soils have acquired their richness. But what the soil will thus do slowly for itself, we may do for it much quicker by manuring. This strength is like a deposit in the bank, which we may draw upon slowly or rapidly as we will, but which will, sooner or later, be gone unless new deposits are made. Natural strength is like the interest on good bank stock. It comes gradually, uniformly; can not be drawn in advance; and if not drawn will be held in store for future use.

How Crops are Dependent upon the Food-Supply in the Soil.

The money we get from the bank, however, whether from checks on deposits, or dividends on stock, we can use to its full value without discount or restriction. But the crop can not make such unrestrained use of the plant-food in the soil. The crop has to do not merely with the supply of plant-food as a whole, but also with each of its ingredients separately. It is, I believe, a principle of military science that a fortification is no stronger than its weakest point. The crop can not rise above the level of the lowest element in the food-supply. If all come up to the required standard, and other conditions are favorable, a good yield is certain; but if any one falls below this standard, the crop must fall with it. Now this food-supply varies in different soils. It varies, not only as a whole, but in its different parts. Sometimes one

element, sometimes several may be lacking. A soil may have a proper texture, amount of moisture, and a full supply of everything the crop needs, except phosphoric acid, for example. Add phosphate in available forms, and the yield will be bountiful.

If I have made my meaning clear, it will be seen that the main point in economical manuring must be to economize what the soil can supply, and to add what it can not. The proper use of special fertilizers is to fill up these deficiencies, to bring the food supply into equilibrium. As Mr. Lawes says, "Soils were meant to be exhausted." That is, the material they furnish was meant to be used. The point is to utilize it most economically, and add what is needed to bring the most largely and permanently profitable results. W. O. ATWATER.

[It seems to us that the most valuable fact indicated by this experiment is, that by far the best results were obtained from the box where the complete fertilizer was applied: results which corroborate the experiments carried on for 8 years by Professor Stockbridge at Amherst. The results indicate that a portion only of the potash and phosphoric acid might be omitted from a fertilizer for such land; how much, and whether an addition of organic matter would help to render available the mineral ingredients of fertility in the soil, are questions worthy of further investigation.—ED.]

An American Agriculturist Experimental Farm.

Devoted to the Testing of New Theories, Methods of Practice, New Crops, Fertilizers, and Implements.—An Important Enterprise for the Benefit of Agriculture.

The Editors of the *American Agriculturist* have always been experienced farmers, gardeners, etc.; and their work and their farms have been largely experimental, for the good of their readers. "The Pines," especially, is a place well known to the public, as the source of much valuable information, derived from Dr. Thurber's trials of new ornamental and flowering plants, and small fruits, and his experience in cultivating the old as well as new varieties; which work will be continued with ever increasing benefit to our subscribers. Recently a gentleman connected with the business of the Orange Judd Company, out of his interest in the cause of good husbandry, has devoted a large farm in Orange County, N. Y., to experimental purposes, for the benefit of American Agriculture; the experimental work to be under the direction of one of the editors of the *American Agriculturist*.

This Experimental Farm is located in a charming valley, running north and south, between two low mountains—Skunnemonk and Lawyer's Hill—extending from the ridge of one to the summit of the other. The soil therefore varies from gravelly mountain-top and loamy hill-side, to alluvial meadows—thus offering an ample variety of conditions. There novelties in field crops and vegetables will be tested and their value reported; new theories as to methods of practice will be severely tried, and their virtues set forth or worthlessness exposed; systems of fertilization, manuring, or feeding crops will be thoroughly investigated, and results reported; various methods in the management and feeding of animals will be compared, and the results given our readers; new implements, which manufacturers may place in our hands for trial, will be carefully tried, and their merits—for the crops there cultivated, and on that kind of soil—will be judged, and impartially reported upon. In short, Our Experimental Farm is to be conducted as an experimental farm, in the interests of the great community of farmers and gardeners; *and all of this experimental work will be carried on in connection with, and as farm practice.* But let every reader of this remember that most farm experiments are the work of years, and that immediate results can be obtained only in a comparatively few cases. So do not expect too much of this enterprise, and we will try to give you all you expect.

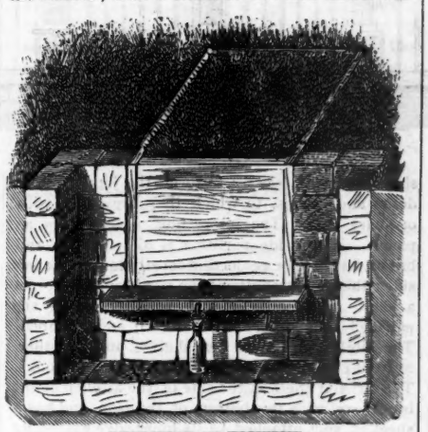
From the mountains on either hand, numerous springs water the hill-sides and meadows. So leaky, indeed, were the mountain reservoirs, that drainage has been necessary, and is now going on, over a large part of the tillable land; but there are also dry ridges, where the dryest of dry-soil crops can be raised. The farm is especially fitted for stock-raising, and rather poorly adapted to grain crops. Stock-farming, therefore, will be the general aim of the practice, with sheep as a speciality. Crops raised for particular industrial purposes, will also be prominent in our practice and experiments, as being of great importance to American Agriculture. This year, as the farm is under course of improvement from the state of neglect it was found in when recently purchased by the present owner, the experiments will be necessarily restricted within more narrow limits than we hope will be the case in the future. Those now under way are as follow:

Experiments Now Going On.

Amber Sugar Cane.—2½ acres on a dry, loamy plain of recently plowed sod, manured with well-rotted compost, and 250 lbs. of superphosphate per acre; 2½ acres on a fertile, moist, clayey loam, thoroughly drained, stubble-land, planted to potatoes last year; manured with 250 lbs. superphosphate, 200 lbs. high grade sulphate potash, and 160 lbs. nitrate soda, per acre. This is to test the value of this crop for the production of sugar, in the East, it having been reported as quite successful in some Western States.

Corn.—9 acres on a moist, drained meadow. In 5 plots, manured with green stable-dung, chemical fertilizers in different forms and combinations, and one plot unmanured. Other experiments are with various combinations of chemicals on potatoes and grass, to be reported in due season.

A Lysimeter has been put in position on a field of deep, loamy alluvial soil. A bottomless box, strongly made of two-inch plank, and about 45½ inches square inside, and averaging 36 inches deep, was forced into the soil until its top was even with the surface; then a frame of five-inch timber was



LYSIMETER IN POSITION.

let down outside the box, so that its upper side was two inches below the bottom of the box. A plank bottom, six inches each way larger than the box, was then forced beneath the box, upon the frame, by means of jack-screws and picking out the earth before it with a sharpened stick; the inside was lined with galvanized iron; and after the bottom was placed in position, the iron of the latter was soldered to the iron of the sides. The bottom inclines 1½ inches from back to front, and an opening is left at the lower side, from which the water which percolates through the enclosed earth is collected in bottles. Room is left in front of the apparatus, by stoning up a cavity dug in the earth, to attend to its working. A rain-guage is at hand to measure the rain-fall. This is the third Lysimeter in operation in this country—the first being that of the Sturtevant Bros., South Framingham, Mass., set two years ago; the second is at the Massachusetts Experiment Station. The difference between the amount of water in the rain-guage and that gathered at the Lysimeter, shows the proportion which percolates through the soil—the remainder being evaporated through the vegetation or from the surface of the ground. By analysis of the water running through, the wastes of fertility by drainage are determined; and thus we shall be able, also, to study changes taking place in the soil under different methods of fertilization and culture, as the area within the Lysimeter will be treated the same as the field outside. In short, the Lysimeter is an apparatus for studying the relations of soil, air, water, and fertilizers; comprising important questions.

Secretary of Agriculture.

The to-do being made over the attempt of the person who is supposed to occupy the position of Commissioner of Agriculture, to have his office elevated to a Cabinet position, is a striking illustration of the estimation in which this great industry is held. Some, in their desire to advance the calling, would grant Mr. Le Duc's utmost wish, evidently supposing that with a bigger name he could do better work. Others decry the whole plan as an attempt at class legislation, and hold up the past and present history of the Agricultural Department as an argument against the principle. That the industries of a nation, by which the bread and clothing, and all material wants of its people are supplied, and property is accumulated, should have some representation in the government, seems too self-evident for argument. Commerce, which represents but a limited number of people, and has only to do with the transportation and exchange of the products of agriculture and manufacture, has its interests carefully watched over by the government, which, for its benefit, has a Consul in every foreign port. Manufacturing, because of the individual and combined wealth of its supporters, commands respect and legislation for its interests.

The *sending* of mail matter is considered of enough importance to require a position at the head of the government. The *protection* of the property accumulated by the industries has two representatives in the Cabinet. While Agriculture, in which over half of all the people of the country are engaged, *producing* all that manufactures, trade, and commerce, have to deal with, and the *foundation* of all that the government is supposed to protect, is placed at the bottom as of utter insignificance. Verily, it seems as if the world were made up backwards, so true is it that the least is considered greatest and the greatest least.

The Department of Agriculture has power and scope enough, as it is, to do all that Agriculture can ask. It only needs a man at its head who knows the demands of the situation, who is an agriculturist in experience, education, and sympathy; a man of broad, liberal mind, and of executive ability, such as is usually selected for equally important positions in other departments. Such a man has never yet filled the office, but instead, it has been used as a sinecure for political favorites, and to pander to the demands of empty-headed politicians whose constituents are so impecunious as to be bought with a package of worthless seed, or a book of stale statements called a "Report," of little value, to say the least. A man who buys seed for distribution, of dealers who would otherwise dispose of them to planters who *wanted* them, or spends large sums for objects which any intelligent farmer would know better than to touch, and who does nothing more, except to seek personal glory, is to be pitied that he can not see his own inability; and the criticism and derision which he and his department receive should be visited upon those who permit this state of things—*the farmers themselves*, whose place it is to demand proper representation in this department. Given a man to *fill* the position of Commissioner of Agriculture, and we would guarantee the expenses of his department for a year if it was not at once recognized as a power for good. The position does not want more power; it only needs a man who can use that which is now given it. If a Secretaryship shall secure such respect for the industry, that a man of the proper caliber would be appointed to its head, then give us the Secretaryship—but not before.

A Summer Cottage, Costing $150.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans are for an economical Cottage, for an occasional summer residence of a family of four

Fig. 1.—FRONT.

persons. It is suited to almost any place, either by the water, or on the mountain, where rest and recreation are sought. It costs scarcely more than a first-class family tent (which it is designed in a measure to supplant), and is far preferable, as it affords better protection and accommodation, and is more convenient and comfortable. It also admits of some of the home-like ways of living. Tents supply little comfort; their form necessitates a cramped, disagreeable position, with barren walls, and very small facilities for housekeeping. They sway and vibrate with every wind, and are intolerable in a storm. Out-door shade, so desirable in summer, is usually already provided by large trees. A single low tree, with extended branches, may shade several cottages, and serve as support for swings and hammocks for the young folks. In connection with the building, stationary fixtures for bedsteads, tables, etc., arranged to fold up when not in use, save largely in room and furniture expenses.....**Exterior,** (figs. 1 and 2).—The upright boarding and battening of the sides, the figured gable barges, hooded projections, and steep roof, are appropriate in material and style. The building is set one foot above the ground, and the space below is inclosed by turfing around to the level of the sill. For better appearance, and to raise the floor further from the ground, an additional foot or two of elevation may be given,

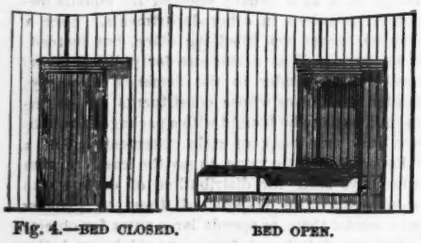


Fig. 4.—BED CLOSED. BED OPEN.

with increased banking or terrace....**Accommodation,** (fig. 6).—The interior has two rooms and two closets. The front portion intended for the family-room is of fair size, with two win-

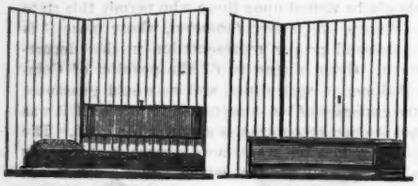


Fig. 5.—BUNK OPEN. BUNK CLOSED.

dows in each of two sides, and three doors, as shown. A folding-bed is built in one corner, and a large shelf between windows at *A;* sufficient room remains for a center-table, chairs, etc. The rear room, or kitchen, has two windows, an outside door, and a closet. A circular shelf and a stove are placed at the side of the closet. A bunk placed in the opposite end of the room, serves as a seat during the day, and for a bed at night. A table is hung against the partition.....**Construction.**—The foundation may be of stone, or posts set in the ground. The floor timber is framed together—levelled on the foundation, and floored over, and the edges cut even with the sills. The upright frame of 1¼ x 5-inch plank, and the plates 1¼ x 6 inches, are then placed in position, with openings for doors and windows, as shown in figure 4. The exterior boarding, dressed on both sides, is then put on and battened. The roof is similarly boarded—with the center portion ceiled down, leaving an air space above. At the ends of this air space in each gable, are openings through the siding for the passage of the heated air from under the roof. Similar openings in the ceiling over the center of each room, lead into the air space. Each opening is neatly finished with lattice work. The roof projects 8 inches, and has a 3-inch marginal strip all around, with pierced barges in each gable, covered with pine shingles. The door openings are protected by shingled hoods resting on dressed trusses. The windows are neatly capped. Each window has battened shutters, with wrought-iron hinges and fastenings. The in-

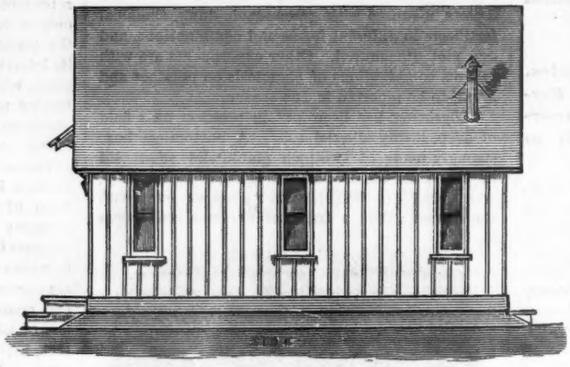


Fig. 2.—SIDE VIEW OF SUMMER COTTAGE.

side framework (see fig. 3) forms the jambs of the doors and sashes, to which they are hung with ordinary buts. The intervening spaces show as panels. The inside partition is 6½ feet high, and has an 8-inch cap projecting mostly to the kitchen side; this cap strengthens the partition, and forms a shelf. The outside and partition doors are panelled; the others are battened and clamped. The kitchen closet has four shelves, and the other, or front closet, has one shelf and two rows of hooks. The circular shelf at the side of the kitchen closet is set level with the bottom of the sash, and has a sheet of zinc attached to its inner edge extending to the floor, protecting the surrounding wood-work from the heat of the stove. The table is 2½ x 4 feet, is hung to the partition, and supported on swinging braces. The bed frame is constructed of ceiling boards, as shown (see fig. 4); when opened, answers the purpose of a bedstead, and when closed serves as a closet for the bedding. The bunk (see fig. 5) is also of ceiling boards clamped together. These devices are easily made by any carpenter, are inexpensive, and answer their purpose acceptably. The outside has two coats of paint, of any desired color, prepared and applied in the usual manner. The inside is stained with oil.

Estimate, cost of materials and labor:

318 feet of timber, at $15 per M.	$5.67
2 sills, 3x7 in. 20 feet long. | 1 ridge, 2x7 in. 20 feet long.	
11 beams, 3x7 in. 13 ft. long. | 2 perlins, 3x4 in. 20 feet long.	
30 flooring boards, at 28c. each	8.40
53 ceiling boards (dressed both sides), at 28c. each	14.84
54 ceiling boards (dressed one side), at 28c. each	15.12
53 battens (half round, 1¼-inch wide), at 6c. each	3.18
10 planks, $3.50; 15 boards, at 28c. each, $4.20	7.70
14 bunches shingles, at $1.25c. each	17.50
6 sashes, $6.00; 3 panelled doors, at $1.15 each	9.45
2 lengths of tile pipe, at 50c. length	1.00
Hardware, nails, and incidentals	16.14
Painting, $25.00; carting, $6.00	31.00
Carpenter's labor, not included above	20.00
Total Cost, complete	$150.00

THE MASSACHUSETTS EXPERIMENT STATION has been established in connection with the Agricultural College at Amherst, by a gift from a friend of agriculture. This College has already rendered most valuable service to the farmers of America by

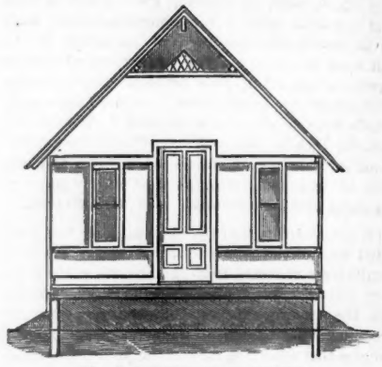


Fig. 3.—INTERIOR OF FRONT.

its experimental work, as well as by the educated young men it has sent out to influence good husbandry. It has done much to investigate fertilizer questions; with it the Massachusetts fertilizer law originated, which example has been followed by many other States, resulting in an enormous saving to farmers against the frauds that were formerly practised against them by unprincipled dealers. Its experiments on crop fertilization, the beet-sugar industry, and the flow of sap in trees, have also been of great value. Yet all this work has been done at the personal inconvenience of its officers from love of the subject, who were only paid for the work of instruction, and have had very little pecuniary help from State or individuals, in the work. The investigations now undertaken by the Experiment Station at the College, are as follows: In cultivation of amber sugar-cane, and manufacture of sugar therefrom; testing the comparative feeding values of Southern, Western, and Northern corn; testing the purity of farm and garden seeds; on feeding stock with reference to the best kind and amount of foods to produce particular results, and a Lysimeter has been put in operation, the same as that on the *American Agriculturist* Experimental Farm, referred to elsewhere. Experiment Stations and farms are capable of doing incalculable good to agricul-

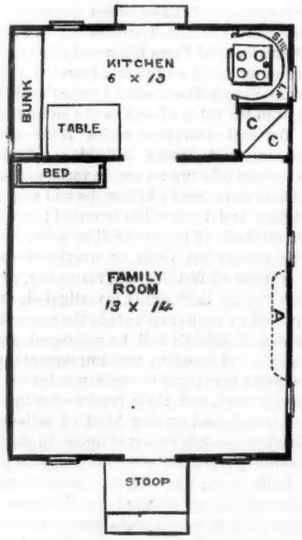


Fig. 6.—FLOOR PLAN.

ture; and it is a great stigma on the enterprise of our farming community that they are not established in every State. While in Europe there are hundreds; here there are only two Experiment Stations.

Agriculture in the Sandwich Islands.

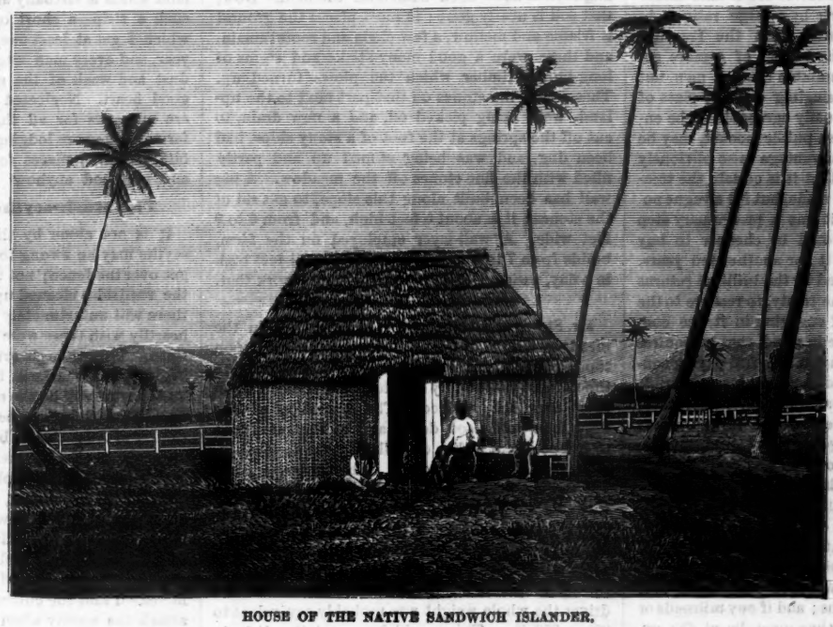
BY EDWARD BELLAMY.

The three main groups of Polynesia, the Sandwich, or Hawaiian, the Tahitian, and the Feejee, have within twenty years risen to a very respectable rank among food-producing countries. Each of the five larger islands of the Hawaiian group has a wet and a dry climate, a hot and a cold one, with the gradations between these extremes, all lying within a day's ride of any point. The trade winds blowing steadily all the year round from the northeast, bring the rain clouds which, impinging against the lofty mountain ranges, are precipitated in showers that clothe the windward sides of the islands in perpetual verdure; while the leeward sides, receiving only occasional showers from clouds which pass the mountain gauntlet, are very dry. But against drouths the "lay of the land" around lofty central mountains affords a remedy in the numerous streams which furnish, in most seasons, ample supplies for irrigation. The perfection of the climate is such that the language has no word answering to weather. The Hawaiians have climate, but no weather. In any given place the temperature and density of the atmosphere are nearly identical the year round, but if change be desired, any variety of climate can be secured by removing a few miles either up or down the mountains, or from the windward to the leeward side, or the reverse. On the uplands of Maui there is generally snowballing to be had in the winter; and on the highlands of Kauai fires are needed in July. The hottest portions of the islands are, however, by no means oppressive, even for out-door labor, owing to the constant breeze from the sea. It is difficult for the visitor to understand how a country whose climate is not so hot as that of the Northern States, can yet be so essentially tropical in its products, growing almost everything that can be grown under the equator. The explanation is the wonderful equilibrium of the temperature, which renders crops which will grow there at all safe as those which could endure considerable variation in temperature.

The soil is uniformly reddish in color, being formed by the decomposition of volcanic rocks. In texture it is extremely dry and light, and even where rains are most frequent, mud rarely accumulates. Within an hour or two after the severest storms the roads are dry. The larger part of the arable land lies in broad alluvial strips running around the shores, and extending five, ten, or twenty miles inland. Above this region are extensive uplands, more suitable for grazing purposes, and then come the mountainous crests of the Islands, towering up ten to fifteen thousand feet in peaks, each of which is an extinct crater, from whose mouths the lands below were originally vomited forth. Extensive forests occur among the central mountains of each island, and also diversify the lowlands. They are usually so dense as to be traversable only with the assistance of the axe, and are broken by innumerable profound chasms and deep circular pits, which were active craters at a period in the islands' history when their surface was pimpled more thickly with burning volcanoes than is a smallpox patient's face with pustules. The trees in these forests are overgrown with masses of ferns and parasites which interlace and bind the whole jungle so as to make it almost impenetrable. Large tracts on all the islands have been devastated by lava flows, and lava fields stretching for miles are of frequent occurrence. Of course these do not offer very eligible sites for plantations, but still it is astonishing what extremely fertile soil this lava makes when broken up. It actually seems as if the cooking process to which it had been subjected had prepared it the better for agricultural operations. It is no uncommon thing to find the natives raising their sweet potatoes on hardly cooled lava, merely broken up a little, and mixed with volcanic ashes.

For fruit lovers these islands are a paradise. Oranges, bananas, cocoa-nuts, mangos, mangosteens, strawberries, guavas, pineapples, figs, tamarinds, chiramoyas, alligator-pears, and all kinds of melons, peaches, citrons, grapes, limes, Ohia apples, raspberries, are but some of the fruits and berries of these fortunate isles. The oranges and bananas, as well as the fruits generally, are of unusual excellence, and far from being difficult to cultivate, only ask to be permitted to grow. The proximity of the San Francisco market, and the close steam connections with that place, as well as Australia, are circumstances which point to the fruit-growing business as one of the most promising industries of the islands; but at present it is so unaccountably neglected as even to make it difficult for visitors to obtain enough fruit for their private use.

Although the lowlands are essentially tropical in their productions, the uplands are a temperate zone in which the crops of the north flourish. Excellent Irish potatoes, although not large, are raised on Maui, and wheat is successfully, although not extensively, cultivated in certain parts. But sugar planting has hitherto prevented any proper attention to other branches of agriculture. Not only have the latter been at a standstill for a number of years, but they have even retrograded of late, owing to the withdrawal of capital from them, to put into the sugar business. Before the reciprocity treaty, which admitted Hawaiian sugar into the United States free of duty, the sugar-planters in the Islands lived on hope entirely, though in 1873, just before the treaty, the exportation reached 23,000,000 lbs. But the middlemen, the Honolulu merchants and money-lenders, to whom the crops were all mortgaged, were the men who made the money. The immediate effect of the treaty was to put a bounty of 50 per cent on all the sugar produced. At this time the business received an enormous impetus, and at present is the principal commerce of the Islands; and its growth and manufacture the principal industry. The gross profit of the mills at once became 100 per cent, leaving them, after the enormous deductions for interest money and middlemen's expenses, a clear profit of half that. Plantations which were in a tolerable condition, at once began to roll up fortunes, while planters, who had been in a desperate state, were placed on the high road to wealth. There was a prodigous rush of capital into sugar-planting. Men sold all they had, begged or borrowed what cash they could, and put the proceeds into a plantation. All other kinds of business suffered paralysis; everybody was anxious to share in the sweet harvest. Everywhere in the Islands, out of Honolulu itself, sugar is the only theme of conversation. It is like a gold min-



HOUSE OF THE NATIVE SANDWICH ISLANDER.

HAWAIIAN DRESS.—MALE.

STONE IDOL.—GOD OF AGRICULTURE.

ing excitement, and indeed the owner of a plantation, in good running order, has something very like a bonanza. Under its stimulus, the importation has probably more than doubled, so that at present the amount of the annual subsidy paid by the United States government to the Sandwich Island sugar business is at least half a million dollars, and will probably reach a million a year in the next six years, for the amount of sugar-land under cultivation increases yearly by a large ratio. As to the planters, it is certain that the Treasury could not be bled for the benefit of a more genial, gentlemanly, and hospitable class of men, but perhaps the propriety of singling out any class of foreigners, however personally agreeable to be enriched out of the American public pocket, may be called in question. The advantage is so obviously all on the Hawaiian side, that it is certain the treaty never would have been made, but for a vague notion in this country that it was a preliminary step to annexation. But it would be cheaper to buy the Islands than to renew it for another ten years.

Should any one be moved by the brilliant returns of sugar planting under the treaty, to remove to the Islands for the purpose of engaging in it, the consideration should be borne in mind, that it requires three years to get a plantation into full paying condition, and that this would probably leave possible but three "treaty crops," as the planters call them, before the end of the six years of plenty, and unless these were exceptionally good, they would leave no great profit over first cost of land and mills. Moreover, although there are still great tracts of good cane lands unoccupied, especially upon the large island of Hawaii, the entire lack of roads and fewness of convenient shipping points on the coast, limit the number of really eligible sites for plantations. All transportation must be done by mule-back over rocky and break-neck paths; and if any railroads or good highways are built, they must be at the expense of the planters, the government is so poor.

Among the Farmers.—No. 30.

BY ONE OF THEM.

Connecticut River Meadows.

What is more beautiful than the grass? Certainly the people along the Connecticut should admire it. I thought in this eminently grass season that the fields in Bergen County, N. J., looked wonderfully well, and rejoiced in it as something to be proud of; but a sight of the luxuriance of the growth of June grass and Red-top in the pastures on the south meadows at Hartford, subdued any such feeling. I refer particularly to the meadows within the dyke protecting Colt's Armory, and that whole section of the town from the rise of the river. This land, like the whole of that interesting formation—the Conn River Meadows—was formed by the wash of the river, is prevailingly level, and was over-flowed by the river once or twice annually. The stream being at these times exceedingly turbid, carried finely comminuted silt over the quiet expanse afforded by the meadows, and here it was deposited. This silt forms a most excellent soil, which will produce fair crops with little or no manure, though contributing regularly to the fertility of the up-land.

One usually observes, rather painfully, on luxuriant pastures, how that the last year's droppings cause a rank growth not relished by cattle, hence conspicuous; but there was very little of this, and certainly as vigorous and uniform a growth of grass as I ever saw. The superiority of the grass not now flowed over annually to that which is outside the dyke, indicates that the soil has been improving all these years, through the action of the air and its own gradual decompositions and changes.

Reclaimed Swamps.

Some time last year, I told the readers of the *American Agriculturist* something of Mr. Augustus Storrs' reclaimed swamp in North Mansfield. I have been there again, and instead of the bogs and tussocks, and roots, and heterogeneous tangle which the plows had ripped and rumpled, and the harrows had twisted and torn, there was a smooth beautiful field neatly plowed, harrowed level and smooth, part of it seeded down with oats, and the part which was worst last year, nearly ready for a second corn crop. It seems almost miraculous. There were in places last year strips of sod cut by the plow, and turned over, which were tenacious enough to have held together, if a team had been hitched to one end of 30 or 40 feet, and I presume might thus have been hauled off the field. Now, that sod is nearly gone; in most places the ground is friable and mellow, a few clods and roots remain, and there were a good many sticks and stems of long-buried timber which the plows turned up. These, with the stones on that part next to the up-land, were being picked off, and a new drain, to cut off the springs at the foot of a stony slope, had been dug, and was being stoned up and partly filled with the fine stones off the meadow. A big wall has been built along this slope, to get rid of the stones; it is about 5 feet high, and from 6 to 9 feet wide. A wall-layer employed on the farm, builds from 7 to 9 rods of a single wall 3½ feet high in a day, assisted by one laborer—rapid work that.

Disk Harrows Again.

Mr. Storrs was trying the Randal harrow in the meadow, and it did capital work, especially upon those parts where a tooth harrow would tear up the not yet thoroughly disintegrated sods, and roll them over the surface. The operation of the disks is to hold a sod down, and at the same time to scrape or cut a slice of soil off from it—that is, when the sods are very tough. When, however, they are tender, the disks cut them up, and so disturb them as to prevent growth—either turning the pieces over, or scraping up the soil adhering to them. Several times harrowing will make mellow ground even of a green sward. On the tough spots the harrow had to be heavily loaded, so that with the driver the whole weight was probably equivalent to 300 or 350 lbs. This would have put the disks in above their axles if it had been in ordinary ground, but here they ran just deep enough to work well.

I have known and approved these harrows ever since Mr. Nishwitz put his first disk harrow upon the market through the agency of the New York Plow Company, though I have never used them upon my own farm, until this year, it being stony and rough. This year, Messrs. R. H. Allen & Co. sent out some for me to try, and report to them as to their comparative merits. We gave the harrows a very thorough trial, on all sorts of ground, and they have done exceedingly well. In the matter of actual pulverization, they do not work so well as the square-toothed harrows; but they make mellow soil, and do not tear up the sods; they cover broadcast grain splendidly, and leave the land level, and in good shape, with little sod showing.

Shorthorn Cattle.

Every time that I see a good herd of Shorthorns, I am oppressed with feeling that other breeds are are not of very much account after all. Not that I hold this opinion, nor that anybody does, but the contrast between such a herd and the Jersey, and Ayrshire, and Devon herds is so great, and the cows are so broad, and straight-backed, and deep, square-bodied, and big-uddered, and soft and mellow-hided, and so abundantly clothed with beautiful wavy hair, and have such prettily incurved horns, and carry their heavy bodies on such proportionately light limbs, and altogether are so high-bred in style, and so majestic in presence, both bulls and cows, that other breeds suffer in comparison. Mr. Storrs' farmer showed an eight months' old calf that weighed about 700 pounds; yet had been fed only simple food, with a daily ration of skimmed milk.

Clean Roadsides.

The roads throughout this country are so wide that the broad strips of neglected ground between wall and wagon track make the journey along many highways seem to be through a wilderness of low trees, bushes and briars, stones and rubbish. Now, my friend of North Mansfield is a naturally neat and orderly man, and this state of things, prevalent as it was in his neighborhood—and in whose neighborhood is it not prevalent, unless some lover of neatness and thrift has made a stir among the rubbish—distressed him not a little, so he has kept his men at work along the roadsides whenever they have had spare time, hacking away with their bush-scythes, and clearing away whatever is unsightly, until one may now recognize land which he owns by the clean greensward which everywhere extends from the fence to the roadway. The small outlay will be more than recompensed in most cases by the strip of good grass land which is virtually added to the farm. I have such a strip—a short one, I regret to say—from which I get at least one cutting of good hay every year, and every man might do the same where the dust and wash of the road keeps the ground in good heart. Neglected roadsides and hedge-rows are nurseries for all the weeds that can pester a farmer; they are lodging places for mice and rabbits, skulking places for foxes and other vermin, and no good anyhow

The Bush-scythe in the Pastures.

It is not alone by the roadside that the bush-scythe may be swung to advantage. Let the men get over the fence; not that most farmers will have the roadsides cleaned up first, but whether or no, there will unfortunately be a fence to get over. I heartily wish there were no fences, nor any need of them. This, though written in May, will be read in July, and that will be just the time when the bush-scythe will do the most telling and killing service. From the 1st, or better, the middle of June, to the 1st of August, the bushes may be cut to death very easily. Earlier there is so much of the stored vitality, which enables plants to push such vigorous growths in the spring, still left in the roots and stumps, that they grow right on after being cut down, with scarcely diminished vigor; and later the ripening wood and fresh stores of pabulum laid up for the next spring's needs, will so far have increased that the cutting will not be fatal If we attack the enemy when his provender is lowest, "between hay and grass," victory will be pretty sure to perch upon our scythes.

Cutting Brush in Winter,

or early spring, has some advantages, especially where sheep, colts, or even calves, are pastured; for the succulent stems of briars and rose-bushes, white birch, and many other shrubs, are so much relished by them that the amount of feed is really greater; and they keep the growth down, in the case of sheep, to such a degree that many things will be killed in the course of the summer.

A Farm Lumber-yard.

One thing more before I leave Mansfield. With plenty of space along the road near his house and barns, where he could pile saw-logs, fence-rails, and posts, boards, and timber, Mr. Storrs actually bought an acre of ground for a lumber-yard. Here are the piles of plank for stone-boats and such like, for stable flooring, boards for all purposes, posts, rails, and old and new lumber, and timber of all sorts. Since seeing this yard, and the convenience of it, I have wondered at the rubbish which thrifty and good farmers suffer to accumulate about their houses and barns, and especially along the roadside near their houses. It is so easily and conveniently remedied.

FEEDING PORK.—Pork is now lower than it has been for 30 years, and the prospect for those who have many hogs is not agreeable. Yet it would not be wise to sacrifice good herds on this account. Those who have not, will find this a good opportunity to weed out their stock, and replace it with a better quality of animals in preparation for the time which is certain to come, when pork shall again bear a profitable value. The chief profit from pure-bred stock consists in its early maturity; and the fact that a pig of a well selected breed and properly fed, can be made fit for the barrel at less than a year old, makes it of far greater worth than one which requires two years to arrive at a salable condition. To keep only the best stock should be the aim of every one who rears animals for sale; and there is no better time to begin to improve one's stock than when the value is low, and it can be done at the least expense.

Talks on Farm Crops.—No. 17.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

The Doctor used to be a great advocate for hoeing early in the morning. A neighbor his, a German gardener, was quite celebrated for raising large crops of cabbage, and the Doctor thought it was because he hoed while the dew was on, and he used to tell me this because he wanted me to rise earlier. All I can say is, that if anybody wants to hoe cabbages before sunrise, I have no objection. But I do not believe that the small amount of water they secure in this way is of much benefit to the plants. The hoeing, especially deep hoeing, is good, but the thorough use of a horse cultivator is better. And I do not see any special advantage in working horses before breakfast. If men and horses get a good night's rest, and are in the field by half-past six, prepared to do a good day's work, it is all I ask. If they are half an hour later in the stable, provided the time was spent in cleaning the horses, I should not object. And so at noon and night. I would rather the horses were thoroughly cleaned, their shoulders washed, the collars examined, and everything made neat and comfortable, than to have the men keep at work until after sundown. Men and horses that work early and late, are apt to loiter during the day. Fewer hours and livelier and more energetic work will be one of the features of our coming agriculture. I like to see a man work when he works.

"Never mind all that," said the Deacon. "I think you will admit that it is a good thing to stir the ground when the dew is on."

"Certainly," said I, "and it is a good thing to stir the ground when the *dew* is not on. Or rather, it is a good thing to cultivate and hoe and kill weeds. The weeds on many an acre of potatoes and corn pump up more water from the soil every day than all the hoeing you could do night and morning to cover up dew, would furnish in a month. The fact is, the water from a slight shower, or from the heaviest dews, rarely reaches the roots of plants."

"You need not tell me," said the Deacon, "that the dews and showers are of no benefit to the crops."

"No one doubts it," said the Doctor. "The dews and slight showers check evaporation. To a certain extent they give the plants rest. During a hot day, we all know that the leaves of corn curl up. The evaporation of water from the plants is greater than the roots can take up. But during the night, evaporation is checked, and the roots keep pumping up water from the soil, and in the morning the plants are full of sap. Probably the main reason why plaster is so beneficial to clover, is due to the fact that it checks evaporation."

"That is a new idea to me," said the Deacon. "We all know that plastered clover is full of sap in a morning, and the dew lies on it longer. I supposed the plaster attracted moisture from the air."

"Not it," said the Doctor. "It has no such power. But it has been proved that if you have two plants growing in vessels of water, and you put plaster in one and leave it out of the other, the one with the plaster will evaporate less water than the other. It is a very remarkable fact, and throws new light on the action of plaster as a fertilizer."

"It shows," said I, "that plaster is likely to be of far greater benefit on rich land than on poor land. And I think experience shows that the better we farm, and the drier the season, the more good do we get from the use of plaster on corn, peas, potatoes, and clover."

"I thought you would say that," remarked the Deacon. "You seem to have no faith in anything except draining, killing weeds, and making manure. And I will say this for you, that your underdraining has given you this spring a great advantage over those of us whose land is not drained. I have rarely known the land so wet."

"Why, then," said the Doctor, "do you not go to work and underdrain? The mere advantage of being able to plow a week or ten days earlier will more than compensate for the labor and expense of draining the land. Farmers cannot keep up with the discoveries of the age, and avail themselves of the wonderful benefits to be derived from the use of artificial fertilizers, unless they drain the land wherever drainage is needed."

"Good," said I, "that is pre-eminently true; and it is also true that artificial fertilizers do very little good unless we secure good tilth. And it is impossible to secure good tilth if the land is not drained either naturally or artificially. When the land is drained, we are prepared to go ahead with our improvements. Our cold winters and hot summers give us great advantages."

"I would like to know how," said the Deacon.

"The winters are long," said I, "and this gives us time to make preparation for the busy season: The summer is hot and dry, and this gives us a grand chance to kill weeds. The autumn is long, and this gives us time to prepare for the sharp work of our late and short spring. But all this requires great promptness and energy, and no little forethought, and good judgment. There is one thing I am thoroughly convinced of—we must get our land ready for spring crops the summer and autumn previous."

"I do not believe in summer-fallowing,'" said the Doctor. "And you yourself, though you advocate the practice, seldom adopt it."

"All the worse for me," said I; "I have frequently sown land to oats or barley when it would have been far better for me to have summer-fallowed the land. I do not say the two crops, barley and wheat, will not bring in more money than one crop of wheat after a summer-fallow. But look at the difference in the condition of the land! Look at the clover after a good summer-fallow on strong, dry land, especially if you have used lime. But if we can not afford to summer-fallow, we *can* afford to fall-fallow. I have plowed some of my land three times this spring for mangel-wurzel. If I had plowed it twice last autumn, one plowing this spring would have made it in better condition."

"Yes," said Charley, "and the land that is plowed early in the fall, and well worked, turns up well in the spring, and is fine and mellow."

"Of course," said I, "much depends on the nature of the soil. It would be absurd to plow light, sandy, or mucky land as often as clayey land. The sandy-land farmer has many advantages over the heavy-land farmer. And this is particularly the case since the introduction of good artificial fertilizers at reasonable prices. I have both kinds of land on almost every field on my farm. It is something of a nuisance. The sandy knolls require more manure, and the clayey intervals more and better tillage. By a little planning, you can plow the heavy portions of the field in the fall, say in September, while the sandy portions can remain in grass and be pastured. Put three horses on to the plow, and turn the sod over, and then roll the land."

"I have thought," said Charley, "that I was pretty good at working and cultivating land, but every time I visit one of our nurserymen or market gardeners, I come home feeling that we have much to learn and still more to practice. 'Comparing ourselves with ourselves is not wise.' We certainly cultivate our corn and potatoes more thoroughly than people did twenty years ago. We have better cultivators, and use them more frequently. But still, as compared with our nurserymen, market-gardeners, seed-growers, and even with our best farmers, most of us are still clod-hoppers! We must wake up. We must have more faith in ourselves and in the soil. We must indulge in the luxury of thorough cultivation. We must have fewer clods to hop, and less weeds to hoe. We *can* farm better, and more profitably, if we only make up our minds to keep ahead of our work."

"Which sounds very fine," said the Deacon, "but how are you going to do it?"

"I can tell you, Deacon," said the Doctor, "how you can do it. Hire an extra man, and never let your horses be idle. Keep them cultivating, plowing, harrowing, and working the land whenever you have opportunity. Give your corn a good horse-hoeing each way, once a week, all through July. Cultivate the potatoes as long as it is safe to do so. Do not sow corn-fodder broadcast, but drill it in rows wide enough apart to admit the use of the horse-hoe. The benefit will more than pay for the labor, and the appearance of the land after the crop is harvested will be almost certain to induce you to adopt a better general system of farming. As soon as a crop is off the land, plow it. No matter how clean it is, plow it. No matter how foul it is, plow it. You will find no lack of work for your teams. I go about the country a good deal, and while I sympathize with a man who is poor and behind hand with his work from lack of means, I have little respect for a well-to-do farmer who digs his potatoes in August and lets the vines lie scattered all over the lots until the next spring. It has a slovenly appearance. It is bad taste and bad farming. Why put off until spring any work that can be done to far greater advantage now?"

"If I did plow my land after digging potatoes," said the Deacon, "I would sow it to rye, and plow it under for manure next spring."

"Very well," said the Doctor; "I have no objection. Do what you like. Only do not let the land and the horses lie idle."

"If I plow the land," said the Deacon, "and sow nothing until spring, does it not lie idle?"

"Not a bit," said the Doctor. "It lies idle if you don't plow it. A weedy corn-stubble, or a potato field, left as though the hens had been scratching the potatoes out of the hills, has an idle loaferish look. But plow it, and make it neat and clean, and it looks as though it was up and dressed and ready for business!"

Lean Cattle for Europe.

Good news for American stock-breeders is the demand for live cattle by German and English farmers. Recently a ship-load of Western cattle were landed in Tönning, to be fattened on the rich pastures of Schleswig-Holstein. Relative prices of young stock there and in this country warrant the importation of these young lean cattle for the purpose. This cargo, numbering 322 head, 15 horses, and 46 swine, besides some fat cattle, horses, and swine for England, were purchased at Chicago, and were so well received by the German farmers that the vessel was at once sent back for another lot. "The ship arrived in the harbor under salutes of cannon and a display of flags, and hundreds of people lined the quay." There is also quite a demand in England for lean cattle and hogs for fatting; and in the embargo against the importation of live cattle at English ports, an exception is made in favor of those from America. This, together with the increasing call for finely bred stock from this country for Europe, argues well for our agricultural interests. The more our attention is paid to stock-farming, instead of such exclusive grain and other crop production, the better will it be for our farming. English agriculture dates its present advanced position from the beginning of heavy stocking of its farms and generous feeding, which added largely to the fertility of the soil, and caused a consequent increase in the yield of crops.

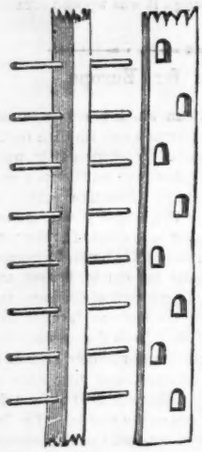
Wool and Mutton.

Wool is low; and wool producers look in vain for any hopeful sign of returning high prices. Threatened changes in the tariff cause uncertainty; which inevitably acts unfavorably upon the production of an important staple like wool. But with or without a tariff, we have no fear that wool can not be profitably produced in this country. We have an enormous business in manufacturing woollen goods, which must be supplied with home grown material. Not many months ago we gave some facts in this regard which have been widely republished by other journals and which will still be fresh in the memory of our readers. Those facts showed conclusively that, no kind of wool we could produce could go a begging for a market while the people needed carpets, blankets, and woollen clothing. We shall probably have to wait many years before seeing wool sell at a dollar a pound; perhaps it may never bring that figure again. But as a rule a sheep pays its expenses with its wool, and gives us a lamb as profit under the worst of circumstances. This ought to be satisfac-

tory. Further than this, the sheep husbandmen of this country must pay more attention to mutton: instead of being quite secondary, it should be of equal importance with wool; and when it is so considered, and breeding is conducted accordingly, the price of wool will no longer determine the absolute profits or losses of the business. Mutton production has been greatly neglected by our sheep farmers; but on the lower prices of wool, we trust it may take its due prominence, as the demand is increasing, and always brings a relatively high price. As in all cases "the best, pays the best," it is the business of farmers to choose that kind of sheep which will give the most and best wool, the highest quality of mutton, and which are sure and prolific breeders. Even in the far West, where wool should pay handsomely at 25 cents a pound, and where pasture is the cheapest, it is found to pay the best to infuse pure blood into the flock, thereby producing superior wool. How much more then should Eastern wool growers find it to their interest to improve their flocks so as better to meet the present difficulties.

Hints and Helps for Farmers.

BARN LADDERS.—Our frequent correspondent, L. D. Snook, of Yates Co., N. Y., sends some devices for barn ladders, which, although not altogether new, may be fresh to many young farmers. Figure 1 represents two kinds of these. That upon the right hand consists of a plank fixed to the side of the building where needed, in which a sufficient number of alternate holes are cut, as shown, to serve as steps. Another method is to insert pins into a post of the frame by which the ascent to an upper floor can be made with ease. Or a ladder, as indicated at figure 2, may be affixed to the frame.



1. POST & PLANK LADDERS.

STONE GATHERER AND CLEVIS.—J. L. Douglas, of Belleville, N. J., sends a sketch of an implement for gathering stone and mellowing the ground (see fig. 4), which is made as follows. A plank 8 inches wide at each end, and 12 inches wide in the center, and three inches thick, is cut in the shape shown. Holes 3 inches apart are bored, and teeth, made as at figure 6, are fastened therein. The plank is secured to a tongue, and strengthened with braces bolted at each end. Handles are affixed to guide the implement when in use. The whiffle trees are provided with screw eyes and rings (fig. 5) at each end, where they are protected by broad bands of iron to prevent splitting. The implement, when drawn over the ground, gathers any stones that will not pass between the teeth, and can be made to leave them in rows so as to be easily picked up for removal. The teeth are fastened in places by means of nuts in the screws at the upper ends, a washer being placed beneath each nut to protect the wood. At figure 3 is shown a clevis suitable for a plow, harrow, or stone-boat. It is provided with a swivel hook, fastened by a nut and screw.

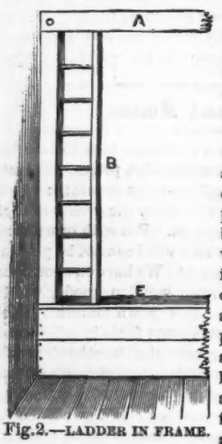


Fig. 2.—LADDER IN FRAME.

A SPRING LATCH FOR A GATE — GATE POSTS.—"O. B.," Brumfield Station, Ky., sends these items: The latch shown at figure 8 is made of hard-wood; is 2 feet long, 3 inches wide for 5 inches of its length where it enters the post, and one and a half inches wide for the rest. It works between the upright bars of the gate, and is kept in place by pins passing through these, and seen at *P*. The other end works between short pieces fastened to the level bars of the gate at *T*. The spring, *S*, is made of locust or other tough timber, and is fastened to the two lower bars. A pin, marked 1, receives the force of the spring, and another marked 2, prevents the latch from going too far. The catch should be made of a piece of hard-wood 4 inches wide, 6 inches long, and 1¼ thick, beveled at one end for half an inch. A mortise is cut in the post, an inch from its front edge, 1 inch wide and deep, and 4 inches long. The pin, 2, is placed so that the latch will enter the post ¾ of an inch. The wood of the post between the catch and the mortise, is cut away with a chisel, and given the same slope as the catch. This is shown at figure 7; the piece added to the post being shown by the dark shaded portion. An arrangement of gate posts, whereby any danger of sagging of the gate is avoided, is shown at figure 9. The blocks, *A*, and the sill, *B*, which is aided by the wedges, *W*, hold the posts rigidly, and enable them to support the weight of the gate.

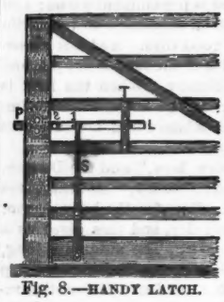


Fig. 8.—HANDY LATCH.

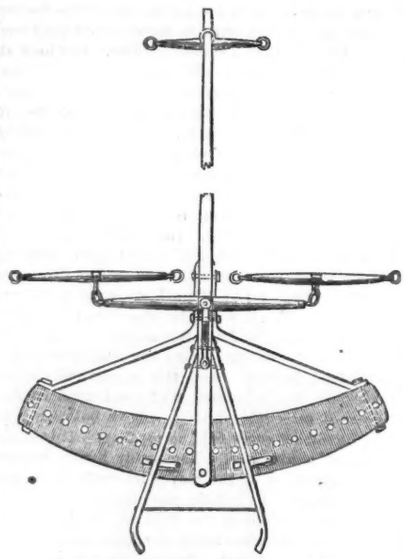


Fig. 4.—DOUGLAS' STONE GATHERER.

SELF-BINDING HARVESTERS.—There is never a need for a thing but it comes to our hand through the skill of the inventor and the enterprise of the manufacturer. The development of the immense plains of Northwest Minnesota as a wheat-growing country, opened up a demand for a self-binding harvester, and the almost immediate supply of several different effective machines, gave a great impetus to wheat-growing on a gigantic scale. Fields of thousands of acres in extent are now frequent, and one Minnesota farmer is operating 76 of these machines the present season, the total capacity of which will be 1,500 acres per day. This is farming on a grand scale, only possible by the fortunate coincidence of immense tracts of fertile level land, and harvesters of this complete character. The moderate cost of these machines, however, should induce their use on smaller farms, or their ownership by persons who will harvest grain on contract, the same as threshing is done.

Fig. 5.

Canning Fruits and Vegetables.

The process of putting up ordinary fruits in self-sealing glass jars is now so simple and well understood, that it is practised in almost every family. Those who readily succeed with peaches, pears, the various berries, etc., find that when they try tomatoes, green corn, and other vegetables, in the same manner, they fail altogether; and as the season approaches, we receive numerous inquiries about canning these articles. There is no secret about canning corn, peas, tomatoes, etc., but the trouble is that the process is not one that can well be performed by women, and with the ordinary appliances of the household. The treatment required by these make tin cans necessary, and involves a long boiling after they are sealed up. The Oneida Community, celebrated for the excellence of their products, long ago published freely every step of their process, and others have given accounts of the methods, and the more there is known about them, the more evident it becomes that the canning of certain articles is a distinct branch of manufacture that can no more be readily introduced into the family than shoemaking or weaving. The general routine is, to fill tin cans with the article to be preserved, and to solder tight. The cans are then placed in a boiler of water, or in a tank which can be supplied with high-pressure steam, and kept at the temperature of the water or steam for a certain length of time. This operation is called in the trade "processing," and much of the success depends upon the length of time each particular article is "processed." Some years ago we went through a canning establishment with its proprietor, who kindly showed us every detail of preparing and putting up. At last we reached the great vat, where hundreds of cans were being boiled in water. "How long are these cooked here?" we asked. "Ah, that is our process!" was the reply, and that was the only secret we found about the whole establishment. Some manufacturers, instead of cooking the cans in water, use a strong brine of salt, or of chloride of calcium, either of which boils at a much higher temperature than clear water, and insures a more thorough cooking. Green corn is one of the articles about which the most frequent inquiry is made, and is one which gives the regular canners more trouble than any other. The corn is cut from the cob, and the cans filled. In some establishments the cobs are boiled in water, and the liquor thus obtained is used to fill up the cans so that there may be no air spaces among the kernels; others use a weak syrup of sugar and salt, to fill up with. The cans are then soldered tight, leaving a vent-hole, a mere pin-hole, in the center of the cover, open, and "processed," *i. e.* set in a vat of water, and boiled for two hours. Each can is then taken out, set upon a bench with a sudden jar, to

Fig. 6.—TOOTH.

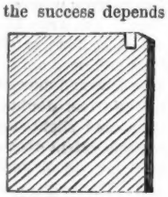


Fig. 7.—MORTICE FOR LATCH.

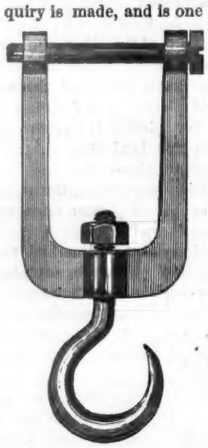


Fig. 3.—CLEVIS.

shake the corn down, and allow the steam to escape; the top of the can is then pressed inwards as much as possible, the vent-hole soldered tight, and then the cans are returned to the vat, and "processed" for four hours longer. Tomatoes are canned in a similar manner, but they require less than

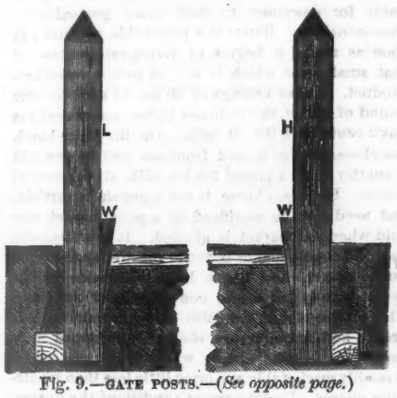


Fig. 9.—GATE POSTS.—(*See opposite page.*)

half as much boiling in the "process." It will be seen that the difficulties attending these operations in an ordinary household are such that it can seldom be advisable, especially as the products are sold at such moderate prices, to undertake them in the household. We are sometimes written to for instructions by those who would undertake canning as a business. To such we would say that it would be highly unsafe to start such a business with no other knowledge than they could get from the mere instructions of any one—even those the most experienced. It is a trade, of which, like any other trade, the general principles can be described, but success will depend upon skilled manipulation, which can only be given by those who have worked at it. Such persons should either employ a skilled foreman or superintendent.

Neatness In the Dairy.

Quality is always a measure of value; and unless perfect cleanliness is observed, the quality of butter or cheese can not be of the best. The dairyman or farmer may not perceive any difference, but the expert buyer, or the fastidious consumer, will instantly detect inferiority in flavor, and hence be slow to purchase. Means for washing or brushing cows are rarely seen in a stable, and still less frequently is opportunity offered for cleansing the hands of the milkers. So that in the great majority of cases impurities invariably get into the pail, are dissolved by the milk, and become absorbed by the butter. Dairymen admit the value of cleanliness and skill; but are not always aware of what constitutes proper cleanliness. As a blind man has no conception of a brilliant sunset, so some persons can not understand what perfect cleanliness and purity are. We were never more impressed with this fact than when visiting the Echo Farm Dairy at Litchfield, Ct. There the stalls were cleanly sanded, and without stain; not a loose hair was to be found upon the cows; the stable was spacious, airy, and well lighted; the cows udders were scrupulously clean; the milker's hands were carefully washed before milking, and even the conversation of the hired men was clean, foul language or noisy talk being forbidden and avoided. The most scrupulous cleanliness was carried out in the dairy, every utensil was pure and bright, and the dairymaid who superintended the butter-making was a pattern of feminine neatness. No one, however fastidious or exacting, could object to the product of this dairy; and there is no reason why the same methods could not be observed anywhere. A cottage can be kept as clean as a palace; and a very ordinary dairy can be made as clean as that of the Echo Farm.

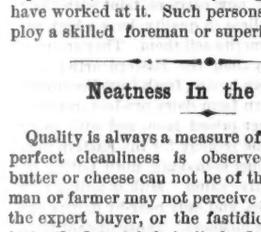


Fig. 1.—FOR CLEANING COWS.

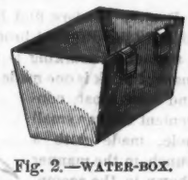


Fig. 2.—WATER-BOX.

We give herewith a few hints as to how this cleanly management may be practised:—All droppings should be removed out at least once a day. The litter should be short; sand, sawdust, or earth, being better than straw. The cows should be cleaned, carded, and brushed daily, and in the spring, when the coat is falling off, they should be brushed before each milking. The stable should be well lighted, and kept whitewashed and free from dust and cobwebs. Before the milking, the udders should be brushed, wiped, or washed; if washed, they should be thoroughly dried at once to avoid cracking of the teats, and clear water be used. We find a brush, or a sponge, preferable to a cloth for this purpose. A small box, arranged as in figure 1, will be found convenient. A leather strap is fastened, as shown, for a handle. The box is divided into two compartments, to hold a card, brush, sponge, and towel, and has a small pocket at each end to hold soap and some common cerate or ointment. A pail of water is taken into the stable; and to prevent fouling, a common pressed-meat can (fig. 2) is used to hold the water; the cover of which is clipped in such a manner that it may hang upon the side of the box. By this system, the labor is very slight, and a small boy or girl can go ahead of the milkers and prepare the cows. If the teats become scratched or cracked by accident, a little of the ointment should be applied to them, this being removed when the udder is cleaned preparatory to milking. There is no need to moisten a cow's teats to draw the milk easily; that is a practice to be avoided in well conducted dairies.

A Portable Sheep Pen.

Many sheep are lost from disease, caused by exposure to the hot sun of the summer months. Dysentery is a frequent complaint thus produced, which a cool airy shelter might prevent. We have found it very convenient to have even a rough shelter, made of poles and rails, and a roof of boughs and straw, in the pasture, to shade the flock from the midday sun. But this, although cheap, is often more costly in the end than a more expensive shelter. A permanent shed, built in a light manner, and mounted upon wheels, for instance, would be far more useful, and although more costly at first than the cheaper shed, would in the end pay a better profit on its cost, if it did not actually cost less at the end of 5 years than the former, with its several removals and renewals. We give herewith some suggestions of such a shed as we would build if we were in present need of one. The shed should be made with a light frame, 18 or 24 feet in length, 9 feet wide, and 6 feet high to the eaves. The frame would consist of two sills, two plates, four posts on each side, four cross beams, and a light roof, as shown in section at figure 1. Braces of iron rods would serve to keep the sides from spreading, and to support the axles of the wheels. Four wheels, 3 feet in diameter, would be required. The sides should be boarded to the bottom, but the ends only half way down, as at figure 2—in which the shed is given in perspective. The sheep can then go in and out as they may feel inclined. A shed of this kind and size would accommodate 35 to 40 sheep, and need not cost over $20, all complete. Where straw, or coarse long grass is to be had, either may be used for the covering, if the frame is well made and stiffly braced. Feed-troughs should be furnished, in which bran or grain may be given. The cost of one of these sheds would be repaid each year, if only in the saving of manure, which would otherwise be dropped in the fence corners, where it is wasted, as the sheep huddle there through the day for shade. The comfort and health of the sheep would be much improved; which means profit.

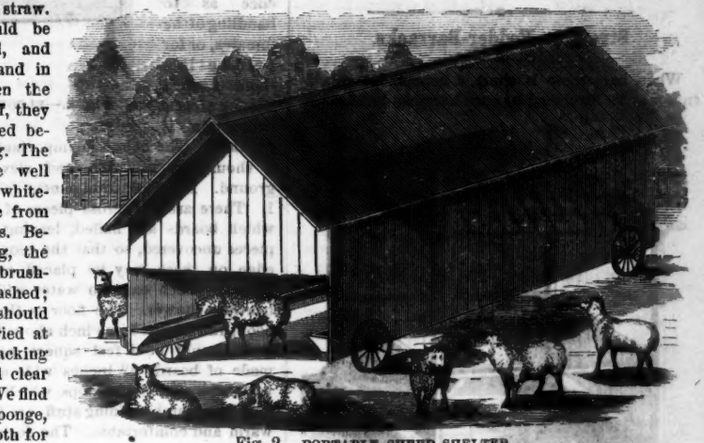


Fig. 2.—PORTABLE SHEEP SHELTER.

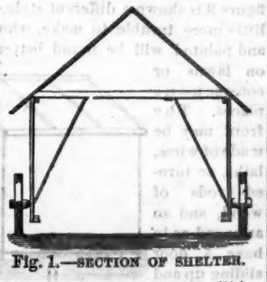


Fig. 1.—SECTION OF SHELTER.

Feed-Racks for Yards or Fields.

We give herewith, in response to some inquiries, some illustrations of cheap and convenient racks for feeding green crops to stock, for use in yards or fields. Either complete or partial soiling is now very frequently practised, and many farmers and dairymen find it impossible to do without this help during that part of the season when pasturing fails. Early planted corn-fodder is now nearly ready for use, and in feeding this a great saving is gained by the use of racks which prevent its waste. At figure 2 is shown a common form of feed-rack; easily made, and which, if three feet square, will accommodate 4 cows without danger of quarreling. It is made of fence strips nailed together and braced as shown. Wrought nails should be used, and the same be securely clinched. A larger rack, useful for cows or sheep, is shown at figure 1. This may be made of fence strips with 4 x 4 scantling for posts, and in size 16 feet long by 4 feet wide.

Fig. 1.—FEED-RACK FOR SOILING PURPOSES.

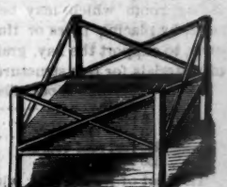


Fig. 2.—CONVENIENT FEED-RACK.

BUCKWHEAT.—It does not pay to make a naked fallow, even to clear land of weeds. For to leave the soil idle for a season, is a waste of resources,

when the same useful effect can be gained in another way: any weedy, rough piece of ground may be plowed early this month, and sown to buckwheat, using a bushel of seed per acre. The weeds will thus be smothered; the rough ground be mellowed; and a fairly profitable crop be gathered. We have seeded land to timothy and clover with buckwheat sown as late as the 12th of July, and had a good catch. Otherwise the ground will be in good condition for preparing in the spring for corn, or for seeding down with barley, or alone, without any foster crop.

Straw or Fodder-Barracks.

When barn-room is short, a convenient substitute may be furnished by open barracks built in the

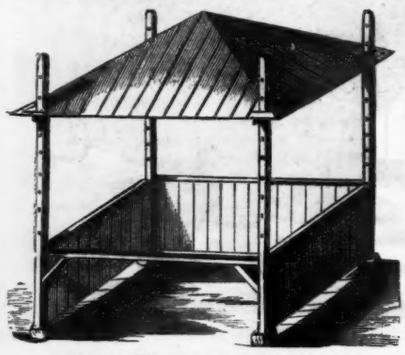


Fig. 1.—STRAW OR HAY-BARRACK.

fields, which also save time in hauling the crops at the busy season. Although stacking is a very cheap method of securing crops, yet in a climate of frequent heavy rains, it is rarely that a stack can be made weatherproof, unless it is so carefully thatched with straw as to cost nearly as much as a fair kind of barrack. Having recently had occasion to build several barracks upon different parts of his farm, the writer gives the following description of two of them: one, partly enclosed, to serve as a tool-house, or shelter for cattle; and an open one. The former is shown at figure 1. There are sills upon three sides, the front being open. The posts are set 16 feet apart, and are mortised into the sills. Girts are set 7 feet above the sills, with braces, to stiffen the structure. The roof, of which figure 2 is a plan of the inside frame, slopes to each side, and is built of 4-inch boards upon 2x4 timber, braced by two sets of cross-ties, as shown. The corners are left open, to allow the posts to pass through. Holes are make in the posts about a foot apart, into which iron pins are inserted to sustain the roof. The barrack is enclosed to the girth, giving 7 feet clear over the sills, and providing room which may be used as a stable or shed, by placing poles or timbers upon the cross-girts, to support the hay, grain, or fodder. The list of materials for this structure is as follows:

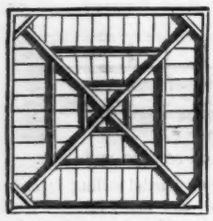


Fig. 2.—FRAME OF ROOF.

3 chestnut or oak sills,	8×8,	16 feet.
4 posts,	6×6,	16 "
8 pieces,	4×4,	16 "
3 " hemlock,	2×4,	16 "
280 feet roof boards.		
350 feet of boards.		

The cost of these items, with 4 one-inch iron bolts 18 inches long, and 5 lbs. of nails, can be readily figured up. The labor of putting up is worth about $5. The whole cost will range from $25 to $40, according to the price of lumber.

Coops for Chickens.

Dry and clean shelter is absolutely necessary for the health of young chicks, and the mother must be confined lest she wander too far or exercise her mischievous propensity for scratching, where scratching is not in place. A plentiful supply of good roomy coops should be on hand for use at this season; or they may be made at once, if not already prepared. The most important requisites are perfect cleanliness and freedom from dampness: if these are secured, it matters very little about the size or shape of the coops; yet convenience as to handling of the inmates, or for protecting them against sudden storms or vermin, is desirable. The floor is an important consideration; it should be movable, and elevated above the ground. A useful arrangement is shown at figure 1. There are two cross pieces of 2 x 3 timber, to which boards are nailed, leaving half the cross pieces uncovered, so that the coop resting with its edge on these may be placed entirely over the floor, in which case no water will enter from the heaviest shower. The floor is thus all inside the coop, and is raised one inch above its bottom. The coop should be 2 feet square, and may thus be made of boards 12 inches wide and 2 feet long, without waste. Some coops, which we have made of half-inch matched lining stuff, are found very light, warm and comfortable. The form is a matter of fancy, but time and labor is saved by having all of the same pattern, as then the materials for several can be cut up at once, and put together afterwards. In this way we have been able to build 10 coops in two days. The shelter-board, shown at figure 2, is hinged to the coop by a few hoops of wire, and in fine weather may be turned back or removed. At

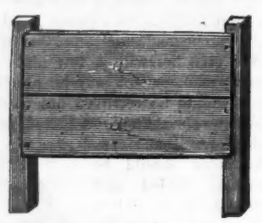


Fig. 1.—FLOOR OF COOP.

Fig. 2.—COOP COMPLETED, WITH SHELTER BOARD.

figure 3 is shown a different style, which, though a little more trouble to make, when neatly finished and painted, will be found better adapted for use on lawns or conspicuous places. The front may be made of wires, laths, or turned rods of wood, and so arranged as to have a door sliding up and down. A shelter-board should be provided; and for all sorts of coops, a feeding-board should be placed in front to keep the food clean. A double coop, with an enclosed run, is shown at figure 4. This is furnished with handles, by which it may be lifted and carried from place to place; it may also be provided with movable floors, as previously described. A neat coop with young chickens are rather pretty in a well kept yard or lawn, and places valuable birds within control.

Fig. 3.—FOR THE LAWN OR YARD.

Is Cheese or Butter the Most Profitable?

The dairy-business is not, just now, in the most flourishing condition. Butter is low in price, and the question is raised if it would not be more profitable for dairymen to turn more generally to cheese-making. Butter is a perishable product; as soon as made, it begins to deteriorate, unless of that small class which is not an ordinary market-product. At the average of 30 lbs. of milk for one pound of butter, the ordinary butter-maker realizes but 2 cents for 3 lbs. of milk. On the other hand, the cheese-maker is paid from one cent to one and a quarter cents a pound for his milk, at the present prices. Besides, cheese is not a perishable article, and need not be sacrificed on a poor market, nor sold when the market is glutted. It is undeniable that the cheese-maker is better off to-day than the butter-maker, and has a large difference in his favor, both in price and convenience of handling. The cheese-maker can also churn a part of his cream, and manufacture the partly skimmed milk into a "half-skim" cheese, which, when well made, is readily marketable at a price little less than whole-milk cheese. Under present conditions the butter-maker, unless he produces a "gilt-edge" article, is

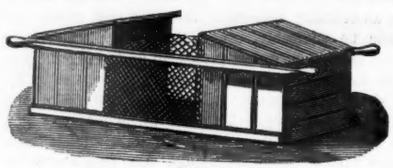


Fig. 4.—A DOUBLE COOP.

under a cloud, especially if he hails from the East. The Western dairyman has an advantage over him, and can afford to give him large odds, and then win. Western dairy goods now carry no taint with their name; they are excellent in quality, have a high reputation, and their merits sell them. They are produced more cheaply than the Eastern article, so that Western creamery butter, fresh from the churn, drives out the Eastern farm dairy product, made at larger cost on higher priced land, and with more expensive labor. The remedy for the Eastern men may be a resort to cheese-making, until butter recovers a proper relative value. Milk is selling very low in the large cities, and only near-by dairies can afford to keep in the business. Those distant from markets are being driven to the creameries for a profitable outlet for their product. This is unavoidable; and many milk-farmers and butter dairymen will follow the example. One caution is needed: This is a season of low prices and small pay for labor; it is indeed "a day of small things." If, however, quality is sacrificed, the present low level will sink yet deeper. To raise the quality of our product now is to save and secure our market; and it will be entirely safe to avoid the skim-milk cheese-manufacture, in trying to get something from both butter and cheese. Fine cheese will keep until the season is closed, and will then sell at advancing prices, because prices advance when stocks are diminishing and no cheese is making. In avoiding loss by making cheese, however, care must be taken not to invite loss by making unsalable goods.

Marking Chickens.

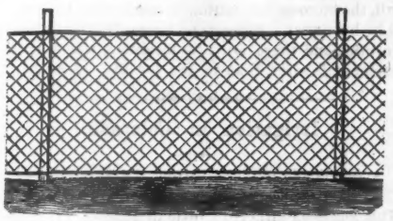
Poultry fanciers find it desirable to be able to identify the different broods of chicks. To do this, a method of marking is necessary. The best permanent mark is one made upon the web of the foot; and the most convenient one is a small hole, made with a punch, in the manner shown in the accompanying illustration. The punch is a sharp steel instrument, and is used by pressing it upon the web between the toes as the foot is held upon a piece of hard-wood, and giving it a twisting

THE FEET MARKED.

motion. The small piece is cut out, and the hole never closes. There is no pain or inconvenience exhibited by the chick, and it is a much more desirable mark than to clip off the toe, as is often done to the disfigurement of the bird. For this hint we are indebted to Mr. H. H. Stoddard, of Hartford, Conn.

Netting for Poultry-Yards.

The evident value and convenience of a light netting to confine poultry temporarily, or to protect gardens from the fowls, has given occasion for frequent inquiries as to where it could be purchased, and how it might be used. Heretofore it has been difficult to procure the nets, and we have been obliged, consequently, to refrain from mentioning



A FENCE OF NETTING.

their usefulness. Now, however, they can be obtained without trouble. The nets are made of twine, of different widths, from quite narrow up to 10 feet, and of any desired length. For confining poultry, the width needed will depend upon the kind of fowls. The large breeds can be kept within bounds by a net 3 feet high, while the smaller ones —Leghorns, Hamburgs, etc.—will require a width of 8 or 10 feet. To support the nets, a thin fence-wire is run through the top meshes, and this is fastened to light stakes, as shown in the illustration. The bottom of the net may be tied to the stakes by small twine. The stakes may be planted 100 feet apart if desired, if the wire is fastened at the ends to firmly set posts. The wire may be attached to the stakes by small hooks, or by pieces of tarred twine. Stronger nets are used in a similar manner for confining sheep in pastures, or when foddered upon green crops. As the wind has very little effect upon these nets, it is not necessary even for high netting to use any but light stakes; which may be planted in the same manner as is usual for tall bean-poles; that is, by making the holes with a bar, and pressing the pointed stakes into the ground by hand.

Root-Pruning Tillage

The benefits of cultivation are well known, but the explanation of the reasons for the effects are not so generally understood. Stirring of the soil that it may absorb moisture, and weed-killing, are held by the majority to be *the* reasons for cultivation. The killing of weeds, that they may not choke the crop, and that the right plants may have the benefit of all the fertility of the soil, is an essential feature of crop raising; but if that and the absorption of moisture were the only good results derived, then we had better sell our horse and hand-hoes, and save our labor. What good farmer has not observed that cultivation in wet weather, when the soil was thoroughly moist, was remarkable for its effect on the crop, sending it forward with wonderful rapidity? The hoeing of cabbages at such times is the most common, and very beneficial. But, according to the old view of the matter, if the theory was correct, hoeing when the soil is dry would have the best effect. Then there must be something wrong with the old idea.

Dr. Sturtevant, of Massachusetts, an able experimenter and thinker, tells us that there are two other reasons for the tillage of a growing crop, or "interculture," as he terms it. We all know that a mulch of fine straw, sawdust, or even of sand, will keep the soil moist, and often save a strawberry or other crop, or keep a newly-set plant from drying up. The action of the mulch is not to absorb moisture from the atmosphere, but rather to prevent evaporation from the soil; which evaporation means the passing off into the air of the soil moisture, and the consequent drying up of the earth. The mulch acts as a barrier to and preventative of evaporation, much as a woollen garment prevents the escape of heat from the body. As the woollen is a poor conductor of heat, so the mulch is a bad conductor of moisture.

Now the stirring of the dry soil breaks up the communication between the surface and the moist earth beneath, making in effect a *mulch* of the layer of light, dry soil; thus benefiting the crop in a drouth by preventing the escape of moisture, and *keeping* what is in the ground, rather than *absorbing* water from the air by day, or gathering the dews at night. The small amount of dew condensed and absorbed by the soil is easily realized by stirring what was dry earth the day before, on the morning after a heavy dew, and observing how little it is moistened, not deep enough to reach the roots.

So much for shallow cultivation. Let us see what Dr. Sturtevant says about deeper work. In hoeing or cultivating we must necessarily cut numerous roots. Where a vigorous growing root is cut, several new roots immediately start forth, thus multiplying the feeding power of the plant. In wet weather hoeing of cabbages, the conditions are entirely favorable for the sprouting of new roots; which doubtless explains why hoeing at that time is so beneficial. It is a not uncommon practice to dig around a tree which is spending most of its energies in producing wood and foliage; the result of which digging is to cut off a large number of its roots, stopping its growth for a time, and allowing it to mature, and changing its energies from wood and foliage to fruit production. Why not apply the same process to corn, wheat, and other crops? We do. And we have been root-pruning ever since our fathers began to handle a hoe or run a cultivator; but we didn't know it. We were waiting for Dr. Sturtevant to tell us what we were doing. Cutting the roots checks the growth for a time, and allows the plant to mature; and as soon as a root is severed, several small roots start out where but one grew before, and so many more feeders are given the plant; and since the checking of the growth turns the energies of the plant to using its already stored up nutriment in fruit production, when the new feeders begin to work they contribute directly to the same end.

A plant or an animal often develops to excess in one direction, to the detriment of other parts: as a cow to beef, with little milk; or a plant to foliage, with little fruit. As Goethe expressed it, "In order to spend on one side, nature is forced to economize on the other side." Plants grown on a too fertile soil often develop a large expanse of leaf, with but few flowers and little fruit. To turn this rampant growth in the direction of fruit and profit, we must change its course. We do this by checking the growth by "root-pruning;" thus directing the energies of the plant to seed and fruit production. This is the work of *deep* cultivation.

In cultivating corn, Dr. Sturtevant, to root-prune, runs a *deep-cutting, sharp-toothed*, cultivator, three times through the rows, beginning when the leaves reach knee-high, and *stopping* when the blooms appear, or when the tassels show themselves, it being too much for the plant to cut their roots much after that period. This deep cultivation, too, or "root-pruning," will only be found advantageous on a rich soil either naturally fertile, or made so by artificial applications, as the conditions we wish to change are only present thereon, that is, excessive leaf growth to be changed to seed production. Herein, too, lies another argument for high manuring, as the more we fertilize, the more profitable will be our cultivation.

Shallow interculture is beneficial as often as one can afford to do it, say once a week or less often. Drilling and hoeing of wheat is based on these same principles. Now, knowing *why* we cultivate, we should be able to practice "interculture" to the greater advantage of the crops, and our profit.

A Cheap Suspension Bridge.

In many places where short foot bridges may be required over small streams, they may be very cheaply constructed of fence wire, with narrow foot boards, in the manner shown in the accompanying illustrations. The supports for the wires are made by fixing a timber firmly to posts set in the ground. Five or six fence wires, No. 9 or 10 gauge, are stretched across the stream, and the ends fastened securely to the timbers. Hand wires are stretched from side to side, and fastened to

Fig. 1.—WIRE SUSPENSION BRIDGE.

posts or stakes, being carried over their tops, by which they are raised to the proper hight. This is shown at figure 1. The foot boards are fastened to the wires by staples, figure 2. It is not advisable to stretch the wires too tightly, as when the tension is very great a sudden jar may snap the wire; they should be left at a quite perceptible curve. The lower outside may be connected with the upper wires, by short ones placed a few feet apart.

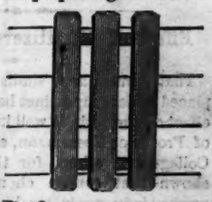


Fig. 2. FLOOR OF BRIDGE.

Portable Fences.

Light portable fences are often of great convenience for dividing farms, in place of permanent ones, which are generally an obstacle to clean culture, very expensive, and several of which would be required, where one portable fence might serve the same purpose. Of the great variety in use, the two here described will be found cheap, easily made, and useful. That shown at figure 1 is constructed in panels 14 feet long and 4 feet high, and made of

Fig. 1.—PANEL OF PORTABLE FENCE.

three upright bars 4 feet long and 6 inches wide. To construct a section, lay the uprights upon a smooth floor, level ground, or pieces of timber, in their proper positions; then nail to them, lengthwise, strips of common fencing stuff (6 inches wide), using wrought nails, which should be well clinched. The panels are supported by stakes on one or both sides, as may be necessary, to which they are fastened by wires or pieces of tarred cord.

Fig. 2.—PORTABLE FENCE OF PICKETS.

The bottom strip is nailed 5 inches from the ends of the uprights, so as to raise it that distance from the ground. The spaces between the boards are 5, 6, and 8 inches. Another method is shown at figure 2. Strips 14 feet long are provided, and pickets, or short pieces of waste-board, or split timber, are nailed to them, as in the cut. The panels are fastened together by the ends of the level strips, and are supported by stakes driven in the ground. A very

useful and handsome fence may be made of light poles, either split, or flattened with an ax where the uprights cross the horizontals; using wrought nails.

Sawing Timber.

A recent article, descriptive of the method of sawing timber with whip saws, has brought several enquiries for a simpler method which shall not require so much preparation. We give a plan in the illustration upon this page of the simplest manner of arranging the saw-pit. A bank of such a shape as indicated, or a pit excavated in the ground of a similar shape, will be required. A horse, or trellis, of stout timber, is constructed as shown, upon which the log is rolled, with one end remaining upon the bank, and thus sawn; being moved as may be required. When one-half is sawn through, the log is rolled on to the bank, and is swung around so as to bring the other end on to the horse, when the sawing is completed. It is better to have two horses, so that one can be moved as will be found necessary from time to time.

Effect of Fertilizers on the Grape.

That bones and similar manurial substances placed under grape-vines have a decidedly beneficial effect on the fruit, is well known. The experiments of Professor Goessmann, at the Mass. Agricultural College, and others, for the last few years have shown that certain chemical fertilizers have a marked influence in developing particular characteristics of fruit. Previous improvements in plants have been almost altogether by means of crossing varieties, by selection and cultivation: the food of the plant having been seemingly unthought of, save in a general way, beyond the accepted fact that *fertility* was necessary. What "fertility" means is but a vague idea to nearly every farmer or fruit grower; that it signifies the *quality* of fruit, as well as amount and size, is seldom realized. But such is the fact, provided the "fertility" consists in the proper constituents of plant-food. How important it is, then, that we pay more attention to the question of fertilizers, when small fruit or large fruit, fine flavor or poor flavor, pulpy fruit or fruit with the melting quality, fruit which will keep or that which will soon decay, freedom from disease or mildew—when these differences, the differences between success and failure, may be largely influenced, perhaps controlled, by the kind of food supplied at the roots. That there is an actual difference in the composition of fruit under different circumstances is shown by the following table of analyses by Dr. Goessmann, of the Concord grape, and of the purple, wild variety of the same species (*Vitis Labrusca*); the parent of the Concord:

CONCORD GRAPE. (Not Fertilized.) Date Gathered. 1876.	Percentage of dry matter at 100°-110° Centigrade.	Percentage of grape-sugar in the juice.	Percentage of sugar in solid dry matter.	Cubic centimeters of soda solution required to neutralize the acid in 100 parts juice.
July 17.....	8.30	0.645	7.77	
" 20.....	8.10	0.625	7.72	216
Aug. 2.....	9.94	0.988	9.44	249
" 16.....	10.88	2.000	18.38	229
" 30.....	15.58	8.62	55.33	120
Sept. 13.....	17.48	13.89	79.46	55
" 4.....	19.82	16.13	81 38	49.2
PURPLE WILD GRAPE.				
July 19.....	9.00	0.714	7.93	204
Aug. 4.....	12.25	1.10	8.98	249
" 16.....	12.48	2.00	16.03	238
" 30.....	16.58	6.50	39.81	147.6

The figures in the last column indicate the free acids in the juice. The difference in the proportion of sugar at different dates, of fruit from the same vine, and between the wild and cultivated varities, is quite marked; a fact very well known to those who eat Concords, and try to eat the wild ones. This variation in the amount of sugar also means a variation in acids and other constituents, and these several variations cause all the difference in flavor, texture, and in keeping quality. Yet these characteristics can all be influenced by means of fertilizers which act upon the development of the sugar of the fruit. The effects of cultivation and fertilization on the composition of some wild varieties of grapes are shown in the following experiment. The fertilizer used in this case was composed, per acre, of 180 lbs. nitrate potash, and 450 lbs. of superphosphate, containing 12 per cent soluble phosphoric acid:

(*a*) Berries of Wild White Grape, without stems, collected on the 20th of September, 1877. (Dead ripe.)

(*b*) Berries of White Wild Grape, without stems, from College vineyard, treated with fertilizer No. 1. Collected 20th of September, 1877. (Dead ripe)

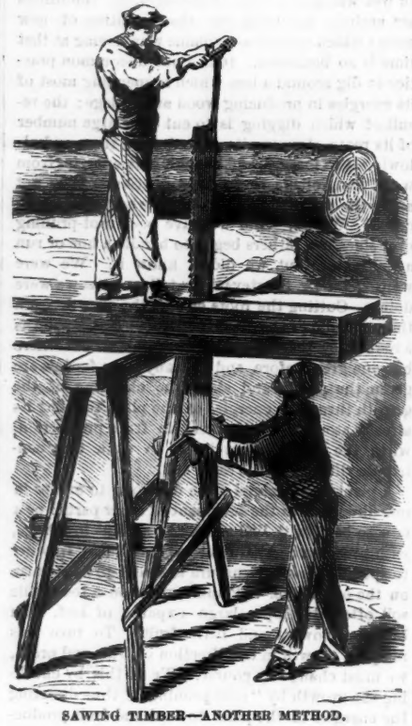
(*c*) Berries, without stems, of Wild Purple Grape, collected 20th of September, 1877. (Dead ripe.)

(*d*) Berries, without stems, of Wild Purple Grape, treated with the above stated fertilizer. Collected 20th of September, 1877. (Dead ripe.)

	Moisture lost at 100°-110° Centigrade.	Percentage of dry matter at 100°-110° Centigrade.	Percentage of grape-sugar in the juice.	Percentage of sugar in solid dry matter.	Cubic centimeters of soda solution required to neutralize the acid in 100 parts juice.
(*a*)	79 98	20.02	10	49.95	130
(*b*)	78.35	21.65	14.29	65	65
(*c*)	83.31	16.69	8.22	49.25	104
(*d*)	80.45	19.55	13.67	69.92	121.6

These analyses show very decidedly the influence of mere cultivation on wild varieties, making a difference of nearly 20 per cent of sugar. Further investigations in this direction are in progress.

It has been found, by Dr. Jabez Fisher, an unusually successful grape-grower, that animal manures make strong vines, but not much fruit, and tend to induce rot and mildew; while potash and superphosphate had quite the opposite effect, producing a large amount of fruit, of superior quality. Mr. Auger, the State Pomologist of Connecticut, is trying similar experiments, as well as several others, in conjunction with Dr. Goessmann, and with remarkably like results in each case.



SAWING TIMBER—ANOTHER METHOD.

Increased Rainfall in the West.

As might have been anticipated, the rainfall in the far Western States, formerly hardly adequate for the purposes of cultivation, has considerably increased since the occupation of the country, and the cultivation of the prairies. Heretofore every condition has been unfavorable to the retention of the water in the soil. The surface, beaten hard, and covered with an impenetrable sod, could not absorb the rain water, which soon found its way into the water courses and streams, leaving little moisture in the soil to temper the aridity of the atmosphere. The winds were dry and thirsty, and sucked up the water left in pools and swales with great rapidity. But as soon as the tough sod has been plowed, and the soil been mellowed and made absorbent, the rain soaks into the ground instead of flowing off, and percolating through the subsoil, supplies springs, which break out in low spots and furnish water for new rills and brooks. The atmosphere is no longer parched, but becomes moist, and its former extreme variations of temperature do not occur. The climate changes, and the moisture of the air, and the consequent rainfall, are increased. A new circulation is established, and the storms and showers are those of a temperate instead of a torrid zone. Facts have shown that these conclusions are correct, and the observations taken in many places near the 100th meridian, and eastward to the Missouri River, indicate a greatly increased rainfall, the increase amounting in many cases to several inches a year. Farmers no longer fear disastrous drouths, and there are few localities, where their business is safer, than in the locality referred to.

Irrigation in Colorado.

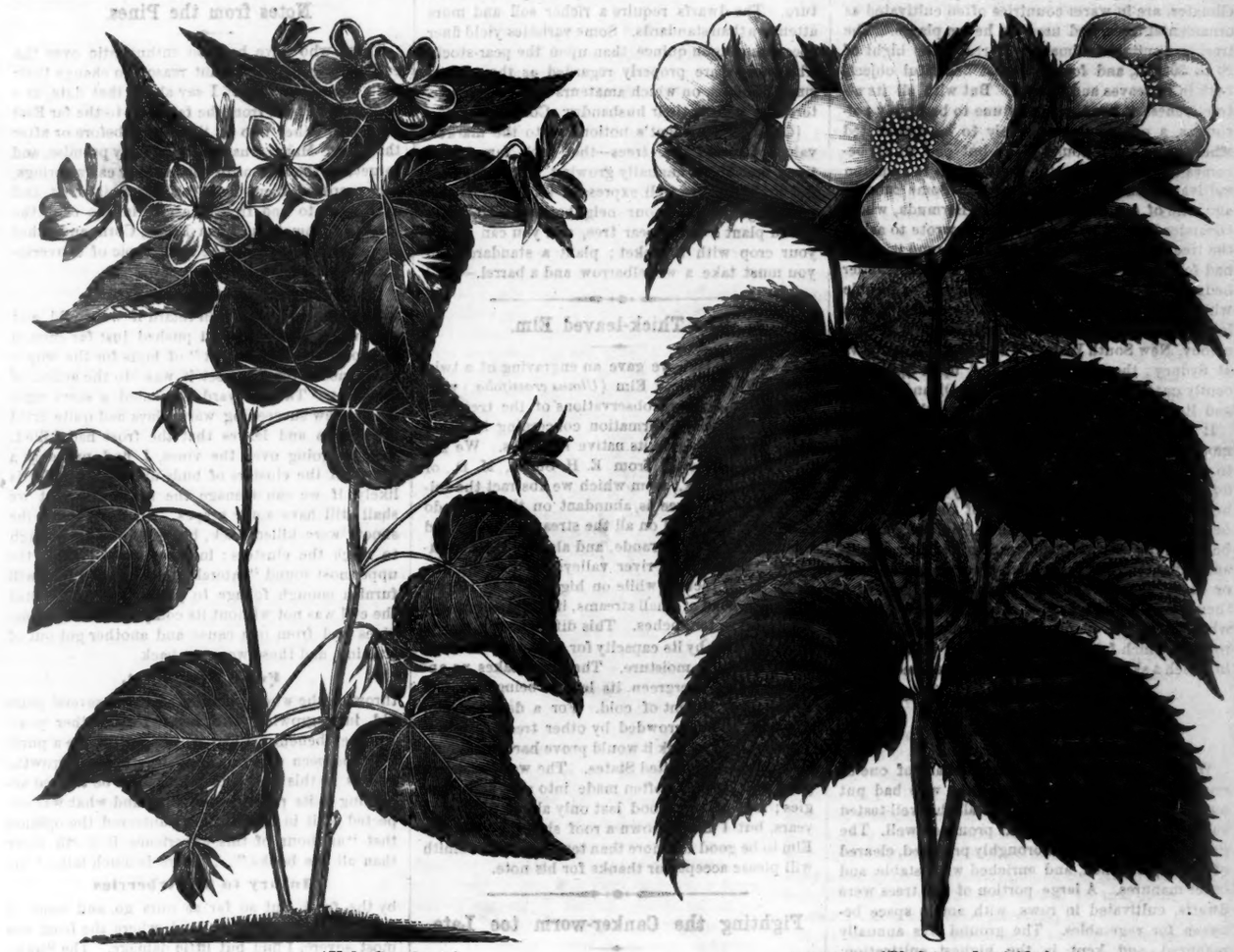
A practically rainless district, the agriculture of Colorado is necessarily carried on by irrigation. This has been hitherto a little understood art in the United States, but recently it has been practised with such success, that it is rapidly extending through the arid parts of the country. The literature of irrigation too, has made a beginning with us and its principles set forth for those who would practice it.* By and by we shall know more through the experience of irrigators, and the skill of hydraulic engineers; and it will become widely used as an indispensable means of cultivation itself, as well as an accessory to ordinary methods. The example of Colorado is very instructive and encouraging. This now populous and prosperous State, was settled by a handful of enthusiastic, but shrewd men, who took their fortunes as it were in their hands and launched upon an unknown enterprise. Had they known the history of this art of irrigation, and the extent to which it has been and is now used in other countries, there would have been less doubt about their venture. As it is they have made a grand success of what they did not know could hardly have failed with proper methods, but the credit is none the less for them. At first it was doubted if Colorado could sustain its farmers. Now it not only sustains a large population engaged in varied industries, but exports much of its products eastward. As the capacity of the streams is better understood, and as economical methods of using the water are learned, the breadth of land under irrigation is rapidly widening. Nearly a million acres of land is expected to be brought under cultivation the coming season, and new canals are begun and proposed. Hitherto the prices of produce have valued high, which has tended to encourage the enterprise. As production increases, prices are falling, but this will act in favor of the development of the mining, manufacturing, and stock interests, which in turn will enlarge the outlet for farm produce, and stimulate agriculture.

TOBACCO.—The late unpleasantness experienced by tobacco growers, has given place to a more satisfactory condition of things. The last crop of "seed-leaf" has been of unusually good quality, which has had the effect of stimulating buyers as well as prices. Dealers are feeling elated at their position, and are looking for an early resumption of activity in business. This warrants an easier feeling amongst producers; and the prospects are fair for a gradual return to the cultivation of this crop. While tobacco is not exactly a staple farm crop, yet there are numerous cases in which a farmer, who has prepared himself at a large outlay to grow it, may reasonably manage his farming operations so as to look for his money income from this source, in preference to any other.

* "Irrigation for the Farm, Garden, and Orchard," published by the Orange Judd Co., New York, price, $1.50.

The Canada Violet (*Viola Canadensis.*).

The few of our native species of Violet which have any perfume, possess it in so slight a degree, that we cannot commend any of them for cultivation for this quality alone. If we look for perfume, we must take some variety of the European Violet (*Viola odorata*), and accept our own for the beauty of their flowers only. In former volumes we have figured the beautiful Birds-foot Violet (*Viola pedata*), beautiful in its ordinary form, and especially so in its white and two-colored varieties; these plants, notwithstanding their lack of odor, are, on account of the abundance, large size, and long duration of their flowers, in much esteem among European gardeners. Some of the forms of our commonest Blue, or Hooded Violet (*V. cucullata*), some of which have pure white, and others variously blotched flowers, are finding their way into cultivation. During the past season we have had several forms of this sent for a name, showing that it has obtained a foothold in various gardens. The two native violets we have named, the Birds-foot, and Hooded (the names referring to the form of the leaf), belong to the section of stemless violets; *i. e.*, their leaves and flower-stalks all come directly out of the ground, having their origin from a subterranean stem. Besides these, we have a set of native violets with branching stems, and of these perhaps the most conspicuous is that, which Linnaeus called *Viola Canadensis*, the Canada Violet, but which is by no means confined to Canada, as it is found in all the Northern States, and southward along the Alleghany Mountains. It is a native species more frequently found in cultivation in Europe than with us, yet we are sure that any one who saw it in masses, as it grew in our rock-work this spring, would admit that it was well worthy of cultivation. In giving an engraving, we are confined to a single stem or two, and all we can hope to do, is to show the shape of the leaves and flowers, and give an idea of the details of the plant. It forms a dense mass of such stems as these, from a foot to two feet high, and produces a great profusion of flowers, which last a long time. The flowers are mostly white on the inside, the side-petals bearded, and the upper ones tinged with purple on the outer surface. Some variations from the usual form have been noticed, and it is very likely that careful observers will find that this is quite as much disposed to sport, as are the other species. Our California friends will find in their rocky woods, a species which is much like the Canada Violet. Indeed, when we first came upon it in that rich botanical region, around the mines of New Almaden, we hailed it as our old New England friend, but a closer inspection showed it to be the Western representative of our species, the Eyed-Violet (*Viola ocellata*) of Torrey and Gray, so called because each of the side-petals has a little purple spot or "eye" near its base. A very neat species it is, and we advise the many lovers of flowers on the Pacific coast to introduce it into their gardens, which they can readily do, when the dry summer puts this, as it does their other lovely spring flowers to rest, and the roots are dormant.



CANADA VIOLET—(*Viola Canadensis.*) JAMABUKI—(*Rhodotypos kerrioides.*)

New Japanese Shrubs—The Jamabuki.

Japan has greatly enriched our collections of hardy shrubs and herbaceous plants, and while a number of the shrubs from that country are well known and popular, we find that others, equally meritorious, are seldom seen in cultivation. If one takes up a catalogue, and finds "*Rhodotypos kerrioides*, a fine shrub from Japan, with the habit of *Kerria*, but large white flowers," as there is nothing in the announcement to attract the attention of those who do not know *Kerria*, one in making his selection passes this by, and the nurseryman concludes that there is no demand for good things. It is a fact, and we may as well accept it, that people in general do not take to botanical names. However unreasonable this may be, and however we may show that some botanical names, such as *Magnolia*, *Geranium*, and others, are in common use, the fact remains that if we would popularize a plant, we must give it—unless its botanical name happens to be one like *Coleus*, which every one can remember—a name that will *take*. For this reason, in calling attention to a useful and showy Japanese shrub, *Rhodotypos*, we have been at some pains to hunt up its native name, and give our readers the choice between the botanical *Rhodotypos*, meaning "rose-form," and the native Japanese name *Jamabuki*. There is but one species of *Rhodotypos* thus far known, and it has been named *kerrioides*, from the marked resemblance of the foliage of the shrub to that of *Kerria Japonica*, the old "Japan Globe Flower" of our gardens, which makes itself almost a weed, and which is still known in some catalogues by the incorrect name of *Corchorus*. The "Jamabuki," or *Rhodotypos*, is a perfectly hardy shrub, flowering in April, its foliage being so much like that of Kerria, as to warrant its name; but the flowers, instead of the deep yellow of Kerria, and their flimsy texture, are of the purest white, and much larger and firmer. The engraving gives flowers and leaves of the natural size. The plant belongs to the Rose Family, and, unlike most of the showy members of that, it has but four petals, the usual number being five. The fruit consists of (usually) four little stone fruits, like the grains of a blackberry, and according to Siebold and Zuccarini, who first described it, become of a brilliant black color, and remain so until the middle of winter. We have had the plant in cultivation for sev-

eral years, and find it one of those easy-growing things that has every element of popularity. It is not particular about soils, does not get so rampant as to need much checking, forms a shapely bush, which in early spring shows an abundance of pure white flowers, which last a reasonable time. It is equally deserving of a place in the shrubbery with the Weigelas, which are now deservedly popular.

The Oleander Poisonous.

The different varieties of the Oleander (*Nerium Oleander*), so popular as house plants in cool climates, are in warm countries often cultivated as ornamental trees, and used as hedge plants. The tree, in a suitable climate, will reach the hight of 20 to 30 feet, and forms a most beautiful object, both in its leaves and flowers. But with all its attractiveness, it has the misfortune to be highly poisonous, a quality not so likely to be manifested when grown as a house plant, but one which becomes of serious importance when it is in common cultivation in the open grounds. Some months ago, one of our correspondents in Bermuda, where Oleander hedges are very common, wrote to ask if the tree could poison the herbage around it, as he had found animals that grazed near the Oleander hedge were frequently made seriously ill—a trouble which might be readily caused by a few fallen leaves. Later accounts come from another British colony, New South Wales, of the death of six cows at Sydney; the animals were fed upon grass recently cut from a lawn on which the Oleander grew, and its leaves became mingled with the fodder.

It is quite likely that the poisonous principle is more active in climates which will allow the plant to grow continuously in the open air; still, while we do not remember to have heard any casualty from house plants, it is well to know of the danger and be on guard against it. St. Louis, Mo., may almost be called the City of Oleanders; such is their abundance, that it would seem that every house has one or more bushes, and the markets are gay with them. We should expect accidents here, if any where, from the plant. A case is recorded in Europe, in which fatal results followed eating meat in which a skewer of Oleander wood had been used.

Dwarf Pear Culture.

We were recently in the pear-orchard of one of our most distinguished pomologists, who had put out some eight hundred trees of all the well-tested varieties, as well as those that promised well. The ground had been most thoroughly prepared, cleared of stones, trenched, and enriched with stable and other manures. A large portion of the trees were dwarfs, cultivated in rows, with ample space between for vegetables. The ground was annually manured, and kept in the highest cultivation. Great pains were taken to train the limbs of the dwarfs very low, to shorten in the annual growth, and by thinning the fruit to restrict the bearing to the production of limited crops of the very finest specimens. It must be said in justice to the experiment, which extended over some twenty years, that while the proprietor lived, and gave his personal attention to the dwarfs, the most of the varieties flourished and gave fair crops, though they could hardly be called remunerative, when compared with the products of his standard trees. Since the death of the proprietor, which occurred some two years ago, they have missed his supervision and the care also of a competent gardener. The rows of dwarfs are sadly thinned, many of them having been cut down as unprofitable, and the spaces between are covered with a wonderful growth of clover. In our own garden we have three dwarf-pears—two Bartletts and a Muskingum, the planting of a former occupant. They bear a limited quantity of good fruit every season, but they do not compare favorably with the yield of standards planted at the same time, and sharing the same treatment. We have three trees contiguous in the same row, a dwarf Bartlett, a dwarf Muskingum, and a standard Vicar of Winkfield between the two. From the Vicar last fall we gathered a barrel of pears, and not to exceed a half bushel from either of the others. This is about the average yield of the dwarfs, and less than the average of the standard.

For market purposes we doubt if the dwarfs can be made to pay. They are desirable in small gardens, where one is anxious to eat fruit of his own growing at the earliest date after planting. The desirable varieties that do well upon the quince are quite limited. Belle Lucrative, Duchesse d'Angouleme, and Louise Bonne de Jersey, are among the best in most soils. Then come St. Michael, Lawrence, Comice, Beurre Diel, Beurre Bosc, and Doyenne d'Ete, which succeed fairly with generous culture. The dwarfs require a richer soil and more attention than standards. Some varieties yield finer specimens upon quince than upon the pear-stock. The dwarfs are properly regarded as the pets of small gardens, on which amateurs in narrow quarters may bestow their husbandry. CONNECTICUT.

[Our correspondent's notions as to the market-value of dwarf pear trees—that with few exceptions, and these annually growing fewer, they are not advisable, are well expressed by an old Dutch market-gardener in our neighborhood. He says: "You plant a dwarf pear tree, and you can go for your crop with a basket; plant a standard, and you must take a wheelbarrow and a barrel.—ED.]

The Thick-leaved Elm.

In January last, we gave an engraving of a twig of the Thick-leaved Elm (*Ulmus crassifolia,*) with notes from our own observations of the tree, and asked for further information concerning its value from those living in its native localities. We are favored by a letter from E. H. Smith, M. D., of Victoria Co., Tex., from which we abstract the following: "This tree is abundant on the Colorado [of Texas, ED.] and on all the streams west, to and including the Rio Grande, and also on their tributaries. In our rich river valleys, its average diameter is 20 inches, while on high dividing ridges, and at the head of small streams, its diameter ranges from two to ten inches. This difference in size is accounted for by its capacity for enduring extremes of dryness and moisture. The tree makes no approach to an evergreen, its leaves being dropped on the first advent of cold. For a dense shade, where it is not crowded by other trees, it is unequalled, and I think it would prove hardy in almost all parts of the United States. The wood makes a good fuel, and it is often made into rails and shingles; rails of this wood last only about five or six years, but I have known a roof shingled with this Elm to be good for more than ten years." Dr. Smith will please accept our thanks for his note.

Fighting the Canker-worm too Late.

A correspondent writes: "The canker-worms have made their appearance in great numbers in Eastern New England, even upon trees that were tarred during March and April. This does not prove that the application of tar is not a successful remedy. The open winter, which admitted of plowing in January in some places, also favored the ascent of the moths. In severe winters, there is probably no ascent of the moths until spring. Harris says: 'It was formerly supposed that the canker-worm moths came out of the ground only in the spring. It is now known that many of them rise in the autumn, and in the early part of winter. In mild and open winters, I have seen them in every month from October to March. They begin to make their appearance after the first hard frosts in the autumn, usually toward the end of October, and they continue to come forth, in greater or smaller numbers, according to the mildness or severity of the weather, after the frosts have begun. Their general time of rising is in the spring, beginning about the middle of March in the latitude of Massachusetts, and they continue to come forth for about three weeks.'

"No farmer who beholds the melancholy aspect of his orchard this summer, riddled by the canker-worm, should infer that the case is hopeless. The tar should be applied always on paper or cloth—never directly on the bark—as early as the 1st of November, and it should be renewed daily as long as the insects continue to rise. This can be known by the capture of the female moths in the tar. While the ground remains frozen upon the surface, there can be no danger from the insects, and, of course, no need of the application. In the latitude of New York City, there will not be more than 60 days that the tar will be needed. This remedy is effectual, and it is only expensive in labor."

Notes from the Pines.

Those who have been so enthusiastic over the early spring, had abundant reason to change their note about May 12th. I say about that date, as a wide-spread frost from the far West to the far East occurred, either two or three days before or after that time. Many, trusting to the early promise, and forgetting the lessons of former very early springs, had prepared themselves for disappointment, and as I went to and from the city in the cars, the losses in Tomatoes, Lima Beans, Corn, and other crops, seemed to form the chief topic of conversation. Our chief loss was

Among the Grape-Vines.

These we could not well retard if we would, and the succulent shoots had pushed just far enough to expose the whole "set" of buds for the crop—and a most promising set it was—to the action of the frost. The vineyard presented a sorry sight when a few succeeding warm days had quite dried the shoots and leaves that the frost had killed. Yet, on going over the vines, I find probably a fourth of the clusters of buds unharmed, and it is likely, if we can manage the rose-bugs, that we shall still have some grapes. In many cases the shoots were killed back, but not quite far enough to reach the clusters; in these cases I allow the uppermost sound "lateral" to grow, and that will furnish enough foliage to perfect the fruit. Still the evil was not without its compensations. Some vines had from one cause and another got out of training, and these were cut back

For a New Start,

throwing the whole energies of a vine several years old into growing two arms for another year. Another benefit. I had working with me a pupil who had been studying vine structure and growth, and as in this case each vine had to be treated according to its present condition, and what was expected of it in future, he volunteered the opinion that "an hour of this experience is worth more than all the books."....There is much talk of the

Injury to Strawberries

by the frost, but so far as ours go, and some of them are on rather low land, where the frost was most severe, I find but little damage. The Strawberry is a fairly hardy plant, and while no doubt those flowers that happened to be in full bloom just at that time were blighted, and will fall to perfect fruit, enough will escape to give a good crop. The fact that the flowers of the Strawberry come on in succession, and but a few of the whole number are in full flower at once, has no doubt saved them. As to Strawberries—last spring Messrs. E. & J. C. Williams, of Montclair, N. J., sent me a dozen plants of their new variety,

The "Duncan" Strawberry.

These were put out where they might multiply, but being at the end of a row grown for fruit, from which the runners were kept off, the man who was to cut the runners from the old plants, also kept the Duncans clear of them, and I had this spring only the original dozen plants. What they would have done had it not been for the frost, I can not say, but while they did not bear many berries, the few they did give were so far ahead of any others that I am almost afraid to write "two weeks." Still it is a fact that in this spring of 1878 the "Duncan" gave us ripe fruit two weeks before any other of some 20 or 30 varieties, but *not much* of it. See here, Messrs. Williams, if you quote this—quote it all—"excessively early, but a very small crop in an

unusual season." Year before last, the Messrs. Williams brought me some quarts of the fruit, as sent to market from the original bed. I then said it was of fair quality—much better than the Wilson. I now say, from the fruit, ripened on my own vines, that it is more than fair, it is *good*. Those not familiar with fruit nomenclature should understand that fruits are classed as "good, very good, and best," and few be they that are placed in the last category. To avoid misunderstanding, I will say that I do not put the Duncan down as a poor bearer, for it must have been in its fullest flower just at the time of the heavy frost. I speak of it as it behaved *this season*, with the condition of unintended cutting of the runners already mentioned. ....What a difference there is in tastes. In such a multitude of shrubs as I have, there are a few that are prime favorites, and among these is

The Virginian Fringe-Tree,

Chionanthus Virginica.—I use the prefix "Virginian" because some nurserymen will persist in calling the "Smoke-tree," *Rhus Cotinus*, the "Purple Fringe."—The true Fringe-tree, when in full bloom, richly merits the name; it is a cloud of white fringe-like flowers, each individual flower having four long narrow petals, looking as if cut from the thinnest and whitest paper. A gentleman who lives a few miles away, was here a few days ago, and in showing him about I exercised proper tact in reserving the best things for the last. He admired the (so-called) Scarlet Horse-Chestnut, and went into ecstacies over the Weeping Hemlock (and well he might) and other evergreens, just in the glory of their new growth. When at last I brought him to what had been reserved as a *bonne bouche*, as the one choice thing I had to offer, and expected the appreciation that everything else had received, he quietly remarked, "Do you call that handsome?"—It was not so *to him*, and that is all there is to be said about it....I have my hobbies—what gardener has'nt?—the Fringe-tree is one of them, and another is

The Ramanas Rose of Japan,

which was figured in the *American Agriculturist* for Sept., 1875. My plants, the red and white, are from the original stock sent out years ago by Thomas Hogg, Esq., and are now great strong bushes; not only "things of beauty," but "a joy forever" of the whole season round. In the first place the foliage is a "joy" of itself. Its dark-green substantial character seems to defy all insect attacks, and though the plants are in a bed with common roses, which are favored by the slug and every other rose enemy, these are always intact. Then the flowers, four inches or more across, are produced in the greatest and long-continued profusion. To be sure they are *single*, but their wonderful fragrance, and their abundance, will compensate for this, even with those who can see no beauty in other single roses. Then after this "Ramanas Rose" has bloomed long after other roses have ceased, it hangs out its wealth of great crimson fruit, as big as crab-apples, and is almost as showy as when in flower. We have a plant of this rose said to be double; it has not yet flowered, but it must not give up any other good quality in making double flowers, to allow it to take the place of the excellent single one....Speaking of roses reminds me that Mr. Peter Henderson sent me not long ago a specimen of a rose having

Two Distinct Colors on One Plant.

The specimen was not more than six inches high, yet it had two flowers upon it, one a pure white, and the other a deep blush—not such changes as might be due to the age of the flowers, as sometimes happens, but distinct from the start. This is one of those not very rare examples of

"Bud Variation,"

a term happily chosen by Darwin, that now and then occur in our cultivated flowers, and of which the acute florist takes advantage to perpetuate new varieties. Several of our popular roses have originated in this way—notably the two "Sprunts" in this country. A remarkable instance of "Bud variation" occurred in Mr. Henderson's own experience. He sold to a neighbor starting in floriculture a lot of Bouvardias, all from the same stock, when this neighbor's (Mr. Vreeland's) Bouvardias came to bloom, there was one so unlike the rest, and so distinct and valuable, that it has been propagated as *Bouvardia Vreelandii*. None of the remainder of Mr. H.'s large stock showed the same variation.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

The Abuse of Pain.

The little nerves of feeling which run through all parts of the human body carry to the brain intelligence of disaster and of pleasure. The evil messages they bring are called pains. A pain admonishes us that some injury is done to a part of the body—a finger jammed, a toe cut, an arm burned—or that some part is overworked or is wearied out, and must have rest. The nerves but do their duty, when they report faithfully these things, and our duty is to do the best we can to repair the mischief which caused the nerves to report in the way of pain. But many persons are annoyed by these evil messages, and only seek to silence the messenger. The immediate call is for something to "still the pain." Fortunately, the means employed are sometimes such as correct the evil at once, and so put an end to the trouble reported by the nerves. Especially is this the case when cool water is applied to cuts and burns—the relief and the cure begin and go on simultaneously. The same result is usually attained when hot water applications (or fomentations) are made to bruises and sharp pains of various kinds. Pain, which results from overdoing of any kind, is most reasonably "stilled" by rest—general rest of the whole body, and especial rest of the overworked part. Anything that tends to equalize the circulation of the blood, or to make all parts of the body comfortably warm, and no warmer, helps to set the nerves at rest, or to stop pain and dis-ease. Not long ago I saw a man who was suffering with a violent headache (a neuralgic general toothache) furiously kicking, first with one foot, and then with the other, working to get the blood from his head to his heels, because he had found that the most effectual way to cure his headache. Cool applications to the head, and hot ones about the feet and legs might serve the same purpose.

Morphine Drinking.

But I set out to speak of a habit which prevails to an alarming extent among women—the use of morphine, to quiet pain of one kind or another. I can easily imagine that the habit may grow from ignorance of danger. A fearful pain is lulled by seemingly simple means—an opiate in the shape of morphine. The suffering one rests easy, and pitying friends may believe that morphine was just the thing needed. But has the opiate cured the disease which caused the pain? Not a bit of it. It has only beaten down and silenced the faithful monitor, the nerves which, in the shape of pain, told of injury and begged that help be given to the injured part. It is true that Nature, and not medicine, performs the cure, and that the blessed work of restoration to health usually goes on best during sleep, but it should be natural sleep. This will usually come of itself if you put the body into suitable condition—the pores of the skin open, by bathing or rubbing judiciously, the bowels properly relieved, the stomach nourished by simple food, easy of digestion, the lungs supplied with pure air, and cleanliness and quiet all about the patient. But when you give or take the dose of morphine, you make a deadly attack upon the nervous system, and leave the evil condition of things in the body to go on. The dose must soon be repeated, and as the habit of resorting to an anodyne strengthens, the dose must gradually increase, in order to produce the desired effect. Such a course finally breaks down the nervous system, and leaves the one who resorts to it a hopeless wreck—the worst kind of a drunkard.

Mothers, it is believed that those who are most likely to become the victims of morphine are women who, as children, were lulled with soothing-syrup (and let it always be remembered that this syrup derives its "soothing" power from the morphine it contains), or dosed with paregoric or the more potent laudanum. They never learn to bear pain heroically. They grow up inclined to self-indulgence, and if hard work and sickness overtakes them, they fall an easy prey to morphine. Do you know that a person who becomes addicted to morphine cannot be decent without it? It is said that a morphine drunkard can never be trusted to tell the truth. She becomes at last so unbearable in disposition, when not under the influence of her medicine, that her friends make every effort to gratify her mobid appetite. All this that I have said applies equally to the use of opium, morphine being but another form of opium. Neither should be used, except in some emergency, when given by a skillful physician.

Care of Children's Eyes.

It is no uncommon thing now to see, or hear of, mere children using eye-glasses, because of some defect of sight. Myopia (or near-sightedness) is the most common defect, and it is said to be manifestly increasing among school-children, in other countries as well as in our own. The eyes of studious children are especially liable to suffer. Reading tires weak eyes, and eyes grow weak or diseased from too steady application to books. There are many disadvantages connected with learning the alphabet in very early childhood, and danger to the sight may be reckoned among them. The eyes of children, like all their other organs and faculties, are adapted to the study of natural objects, or the phenomena of the world into which they have lately come. This study is play to them, and tends to a healthy development of both mind and body. Their introduction to the fine long lines of little black letters in print should not come too early, or too rapidly—not until a love for nature and a faculty for observation have been so cultivated that reading will not be immoderately attractive. Then they must learn to read and study in a proper light, one that shines upon the book or paper, and not directly upon the eyes. A hanging lamp is much to be desired, and those who read in the evening can sit so that the light comes down upon the page from behind them. In gathering about the evening lamp upon the table, those who read should sit so that the light shines upon the book or paper from over the shoulder—and the left shoulder if practicable. The eyes suffer severe strain from reading when lying down. One who is too tired to sit up, is too tired to read. When the body is enfeebled by disease, the eyes are weak sympathetically, and should not be allowed close application. Reading in railway cars, or in any place where it is impossible to keep a steady focus for the sight, causes strain and injury to the eyes. Children should be taught to avoid all these injurious practices.

Most of the youthful cases of near-sightedness within my knowledge are those who began to learn piano-playing when quite young, and it seems to me that the fixing of the sight upon the notes, while the energies are at the same time bent upon the schooling of the fingers, has a peculiar tendency to develop near-sightedness. Ought not a child's music lessons to be made very short, and the hours of practice few and of brief duration? I think so, not only for the sake of the eyes, but also for the sake of the spinal column and the nervous system.

Starch for Fine Muslins.

A solution of Gum Arabic in water makes a nice starch for lawns and thin muslins, giving them a new appearance. Dilute the dissolved Gum until you find by experiment that you have it just right. It takes but a minute to rub a cloth in it, slightly dry and iron it, to test the strength of the gum water. I am unable to give exact proportions. Lawns renewed in this way, after washing, not only look as though just made up, but retain their good appearance wonderfully well.

To Keep Lemons Fresh.

I have found that lemons may be kept fresh for many weeks if put into cold water. Some use sour milk instead, changing the lemons from one pan to another as the milk grows old. This involves

more trouble and risk, and I hardly think it can be any improvement upon the method with water. Still another way (recommended by one in whose judgment I have confidence), is to bury them in the sugar-barrel. We don't all have barrels of

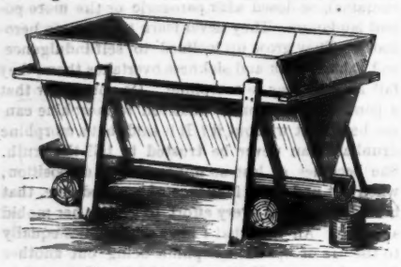


Fig. 1.—A V-SHAPED LEACH.

sugar, but I suspect that salt would answer the same purpose—anything that prevents the evaporation of the fluid of the fruit and keeps it cool. I wonder whether the lemons would not impart some flavor to the sugar in which they were buried. Of course this would not be desirable. My friend said nothing about that.—[This advice, no doubt, refers to brown, or other unrefined sugar, and the following of it can hardly fail to flavor the sugar. We were once told by a sea-captain that he kept lemons for a long time by placing them in a jar, or keg, and covering them with molasses. The chief object is exclusion of air, which the molasses would do most effectively.—ED.]

In Making Lemonade,

we usually pare off the yellow peel, unless the lemonade is to be used immediately, because the peel, by standing with the sugar, imparts a bitter taste to the drink. Some roll the lemons before they are peeled and sliced, to break the cells and set free the juices. Others slice the lemons upon the sugar, in the proportion of one lemon to two large spoonfuls of sugar, mashing the slices with the sugar and leaving it just covered with water for 10 or 15 minutes before filling up with water.

Lemon Flavoring

may be prepared at home in two ways. 1. Save the peelings of lemons used for lemonade or other purposes, when the peel is not all required by the recipe. With a sharp, thin knife, cut off the yellow part, and dry it quickly without scorching. Keep it in a dry place, and when needed, grind to a fine powder before using. 2. To two ounces of the thin yellow lemon rind, add one pint of good Alcohol, improving it if you choose with a few drops of Oil of Lemon. In a few days it is ready.

Lemon Pudding Sauce.

One lemon—the juice and half of the grated peel. One heaping tea-cup of sugar, one-third of a cup of butter, one egg. Beat well together the butter, sugar, and egg, then the lemon (and a little nutmeg if you choose). After a thorough beating together, add slowly half a tea-cup of boiling water, stirring it constantly for a few minutes, keeping it as hot as possible without boiling it.

Baked Rhubarb.

A delicious sauce is made by baking the sliced stalks of rhubarb with sugar. Cut the slices an inch thick, and bake in a deep earthen pudding-dish, after mixing a tea-cupful of sugar to a pint of sliced rhubarb. This can be preserved by canning while boiling hot, the same as fruit.

Rhubarb and Orange Marmalade.

Take one dozen oranges; pare off the yellow peel, discarding the thick white rind and seeds. Cut the peel into fine bits, and put it with the sliced pulp. Add two quarts of sliced rhubarb, and three pounds of loaf or granulated sugar. Boil the whole slowly until it is quite thick. Turn into cups and cover, when cool, with paper varnished over with white of egg, pasted to the cup.

Strawberry Shortcake.

Any good biscuit mixture will do for the shortcake. It is common to make it with sour cream, or sour milk (and soda, of course), with more or less butter, as the milk is more or less creamy. Roll out to form two thin sheets, placing one above the other. When done and still warm, the two sheets of the cake easily separate without cutting. Butter each half on the soft side, and cover thickly with sweetened strawberries. Place one sheet above the other, strawberries uppermost.

Canned Strawberries,

It is an excellent way to sprinkle sugar over the hulled berries, and let them stand two or three hours. Say a heaping tablespoonful to a quart of fruit. Pour off the juice into the preserving kettle, and add sufficient sugar to make a good syrup. When hot, put in enough berries to fill one can, and allow them to boil about two minutes. Dip out the berries, boiling hot, into the bottle, and pour in enough of the boiling syrup to fill the can. Seal immediately. Put a fresh lot of berries with a little more sugar into the remaining syrup, and treat in the same way. If syrup remains when all the berries are canned, it makes excellent jelly. If the berries stand too long in the sugar, it injures their color and leaves them less firm.

Leaches, Lye, and Soap.

In the older States, before the general use of coal as fuel, a leach was an important household appliance; the ashes from the wood burned during the winter were carefully saved, and in spring, these, with the careful housewife's savings of soap-fat, were put to use in the annual soap-making. As wood as a fuel went out of use, good, honest home-made soft-soap also disappeared. Still there are localities where wood is yet the fuel, and though these are much less than formerly, they are sufficient to bring us a number of inquiries about lye and soap-making. The value of ashes depends upon the kind of wood used, the soft woods yielding ashes very poor in potash, which is the important constituent so far as soap-making is concerned. Where soap is to be made from ashes, the first step is to extract their soluble parts, to get a solution of them in water, known as *lye*. To do this, the ashes are placed in some receptacle, called a *leach*, in which water can gradually trickle through them, and come out below as a strong solution or lye.

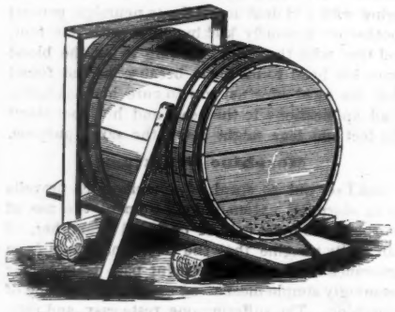


Fig. 2.—USING A HOGSHEAD AS A LEACH.

Our correspondent, L. D. Snook, of Yates Co., N. Y., sends us drawings of two common forms of leaches. Figure 1 represents the old-fashion V-shaped leach, sufficiently well to show its structure. There is a frame of 2 x 3-inch scantling, about a foot from the top, which is stayed by side pieces; the bottom is a log, in which a gutter is dug, to convey the lye to a pail, or other receptacle, placed at its lower end. The manner in which the leach is supported, and the arrangements of its side-boards, is sufficiently shown in the engraving. Sometimes an old sugar or molasses hogshead, obtainable cheaply at "the store," is used as a leach. The hogshead, first having half-inch holes bored in its lower staves and ends, is set up, as shown in figure 2, upon a grooved plank, which will convey the lye to a vessel placed to receive it. This is kept in proper position by a frame, or by braces at the sides, as shown in figure 2.

To "Set the Leach,"

as putting it in operation is called. The old method was to put in the bottom some bricks or stones, then some brush, and over this a layer of straw, and then put in the ashes. This will answer, if no better method can be followed, but it is much easier and better to place on the bottom of the leach, of whatever kind, a piece of old blanket, or old carpet. This will accomplish the purpose for which the straw, etc., are used—*i. e.*, to prevent the ashes from clogging up the holes, and allow the lye to flow out. Ashes moisten slowly, and in filling the leach, it is better to put in a small quantity at a time, moistening each layer as it is put in, and compacting it with a pounder of some kind. If the ashes are thus moistened all through, the leach will work more evenly than when filled dry. It is customary to make in the top of the ashes a cavity large enough to hold a pailful or two of water, and replenish the water as it soaks away. The more slowly the water percolates among the ashes, the stronger the lye will be. It is a common practice to put lime in the leach, six or eight quarts of quick lime being placed on the first layer of ashes. This makes the lye much stronger, the lime converting the carbonate of potash, as it exists in the ashes, in part into caustic potash.

Making Soap with Lye.

There are some facts about soap-making not generally understood, and are here given in brief. The alkali in lye from wood-ashes is always *potash*. Potash will not, with any fat whatever, form a *hard* soap. All hard soaps contain *soda*, instead of potash. All the recipes that are sold for making hard soap from potash, or from lye, require the use of salt. The salt decomposes the potash soap, its soda taking the place of the potash and forming a hard soap with the fat, while the potash, having formed a new combination, remains in the liquid at the bottom of the kettle. From lye alone, then, only soft soap can be expected, and this, when well made, is very useful for ordinary domestic purposes, and vastly better than the soft soap sold all over the country, which is merely common hard soap, thinned to a sort of jelly with water, and is a most expensive article to purchase. While almost every farmer's wife, who makes soap from lye, can do it satisfactorily, and have the soap "come" every time, she will find it difficult to give a precise rule, so much depends upon practice and judgment, or "gumption." In a general way she takes the strongest of the lye, and boils it with the rough grease, pours this into the soap barrel, and then adds the weaker lye as it runs from the leach. The usual result is a barrel of good strong soap, made without much reference to rules or proportions. So far as we can come at a rule, for soap with lye, an experienced soap-maker says: "Have the lye strong enough to float a potato. Take 12 pounds of clean grease, previously tried out, and add to it four gallons of lye, and boil together over a slow fire; put this into the soap barrel, and add more and weaker lye, to make a barrel of soap, frequently stirring."—It will be seen that this is far from definite, and we shall be very glad if some one will give a more precise rule. In making soft soap from potash, the usual rule for a barrel of soap, is 12 lbs. of potash to 14 lbs. of grease. Dissolve the potash in about two pailfuls of hot water, poured on it over night. The potash dissolves quite slowly, especially if in compact lumps. Have the grease, previously rendered, in a barrel, and pour on it the potash liquor, stirring well. If some of the potash, as will probably be the case, remains undissolved, pour on more hot water, and the next day add this to the barrel, and continue doing so, stirring thoroughly, until the potash is all dissolved. Then add cold water, in moderate quantities, stirring each time, until the barrel is full.

Butter-Coolers.

Some time ago the manufacturer of a porous butter-cooler, Mr. A. Reeve, of Camden, N. J., sent us one of his coolers for trial. After careful testing, we find it to be a desirable means for cooling butter in hot weather. It is well known that the process of evaporation results in a reduction of temperature; and this is the principle upon which this cooler operates. It consists of a hollow piece of earthen-ware, as shown at figure 1. The bottom

is filled with water; and upon it is placed the plate containing the butter, which is covered by the upper part, also containing water; which gradually soaks through the porous substance, and evaporates from the surface, producing a temperature beneath the cover as low as 38 or 40 degrees, when the evaporation is active. When placed in an airy position, evaporation is greater, and the temperature proportionately lowered. Figure 2 shows the cooler complete. At fig. 3 is a cooler that can be made in a moment; a large plate is used for the stand. The plate is filled with water, in which a piece of brick, or flat tile, is placed. On this is set the plate of butter. A flower-pot, having a wooden plug to serve as a handle, is inverted over the butter, with its lower edge in the water. The porous pot absorbs the water, or it may be well moistened occasionally, and as it dries, it will cool the butter very rapidly. It should be placed in a draft of air, as in a cellar window.

Fig. 1.—SECTION OF COOLER.

Household Notes and Queries.

The readiness of the many members of the "*American Agriculturist* Family" to help one another, has been shown on many occasions, but never more strikingly than in the replies to "Recipes Wanted," in May last. One housekeeper wished a recipe for the "Queen of Puddings." We made her want known, and forthwith *forty*—save one,—39 of her sisters came forward to her help. The answers came from Maine to Florida and Texas in one direction, and from Vermont to Kansas and Colorado in the other, as well as from almost every intervening State. We had recipes in brief and *in extenso;* in the shortest possible prose, and the longest possible *verse*—both recipe and letter. If there is any one pudding that we ought to know about, it is

THE QUEEN OF PUDDINGS, and here is the recipe: One pint of bread-crumbs, one quart milk, one cup sugar, butter size of an egg. Yolks of four eggs. Flavor with lemon, and bake as custard. Beat the whites of four eggs to a froth, mix with a cup of powdered sugar, and juice of a lemon. Spread a layer of fruit jelly over the custard while hot; cover with the frosting, and bake until slightly brown. To be eaten cold, with cold cream, or warm, with any sauce that may be preferred.....So far as the composition goes, the many recipes were surprisingly alike, but the comments attached were very amusing, such as "The best pudding ever invented;" "The richest pudding known to cookery."—But the funniest part of the whole matter is that the recipe started from this office several years ago,—so long ago that we had quite forgotten it, and now it comes back to us from nearly 40 housekeepers in the precise form in which it first appeared in our columns....In the same with the above paper we asked our friends for a

Fig. 2. COOLER, COVERED.

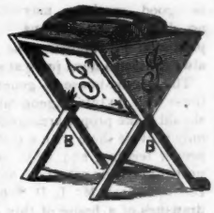
RECIPE FOR "SCRAPPLE," and this has been responded to by over 20 of our readers, but as that can be useful only in cold weather, when pigs are made into pork, we hold on to these until a more timely season....The promptness and the number of responses to these requests are very gratifying, as they show that housekeepers all over the country are ready to come to the help of any one of their sisterhood. We at the same time asked for recipes for the best manner of using

Fig. 3.—FLOWER-POT COOLER.

RYE FLOUR, ALSO FOR SALT RAISING FOR BREAD. We have received several of each of these, which will be given in due time. In the same month, May last, we had an article on "Women's and Children's Shoes," in which we gave a recipe for

SPONGE-BLACKING, such as is, or used to be, sold by all the druggists. A correspondent in Saco, Me., writes that he has made the same blacking for many years in his family, and finds that "the addition of one ounce of camphor to each pint of the blacking preserves it from drying hard, and cracking, as it will do without it." He also suggests that it is much less trouble to purchase the shellac-varnish ready-made at a paint-shop, and add the other ingredients. No doubt. But our recipes are intended for those who must start from first principles, many of whom are beyond the reach of those things which may be readily had in towns and cities.

A PORTABLE FOLDING WOOD-BOX.—From L. D. Snook.—In many localities, even in mid-summer, there are cool spells, in which a little fire in the evening is necessary, not only for comfort, but for health. Those who, with the approach of warm weather, put away all the fire-making appliances, may find a folding wood-box, one which may be used when needed, and set aside when not wanted, a useful household contrivance. The box referred to is shown in the engraving, and may be of a size suited to the wood used, and the quantity it is required to hold. It consists of a frame made of slabs of pine, or other convenient wood, an inch and a quarter thick, hinged together with a wooden pin, or by carriage bolts. The sides and ends are made of any heavy canvas or bagging, tacked to the frame, as shown in the engraving. If desired, the wood-box may be ornamented by the use of brass, or other bright-headed tacks, and the working of a monogram or initial letter on the sides and ends with some bright colored worsted. Such a wood-box will keep "dirt" from the floor, and when the time for which it is required has passed, it can be so folded as to occupy but a small space until a change in the weather to cooler may call it into use again.



FOLDING WOOD-BOX.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

In trying to describe the Telephone I did not expect to make the younger boys and girls understand it, but I hoped by first stating some facts about sound, electricity, and magnetism (which is only a form of electricity), to give the older youngsters, and perhaps some who are not young, a general idea of it.

Last month I told you about *induction*, and that a current of electricity in passing around a piece of soft iron would *induce* magnetism and make the bar of iron a magnet for the time, but as soon as the current stopped the soft iron ceased to be a magnet. It was also stated that a bar of steel could be made a magnet, and hold its magnetic power, forming a permanent magnet, and that a permanent magnet if passed into a coil of wire would induce a current of electricity in that wire. These points were described more in full last month; the object being to show you that electricity could make (or *induce*) a magnet, and on the other hand a magnet could make (or *induce*) a current of electricity. I must ask you at this time to attend to one more point, which will bring us

Fig. 1.

Fig. 2.

Near to the Telephone.

In figure 1 we have a bar of steel, *a*, which is a permanent magnet, and around it is a coil of wire, the wire being covered with silk or cotton to keep it from actually touching the steel; the ends of the coil, *b*, are in contact. If we now bring a piece of sheet-iron, *c*, near to one end of the magnet, its magnetism is disturbed, and at the same time a current of electricity will be started in the wire; on taking the sheet-iron away, the magnet returns to its former condition, and at the

Fig. 3.—THE TELEPHONE COMPLETE.

same time there will be a movement of electricity in the wire. The piece of sheet-iron *induces* a change in the magnet, and every change in the magnet induces a current of electricity in the wire. This may be repeated as often and as rapidly as we choose, and thus keep up a constant disturbance in the wire. Now one step further. In figure 2 we have the upper magnet and wire quite the same as in figure 1, but below at *d* we have another just such bar magnet, wound with wire in precisely the same manner, and the ends of the two wires, *b*, *b*, are joined together. By bringing the sheet of iron, *c*, near to the upper magnet, that as before stated will so affect it as to start a current of electricity in the wire. This current will pass through the coil around *d*, and as might be expected will disturb its magnetism, as would be shown by its action on another piece of sheet-iron, *e*, placed near it. As *c* is moved up and down near the end of the upper magnet, the lower magnet would agitate *e* in the same manner. No matter if the wires between the two were several feet, or several miles long, the disturbance caused in the magnet, *a*, would be instantly repeated in the magnet, *d*. This is, in brief,

The Principle of the Telephone;

let us see how it is applied in use. Figure 3 gives the

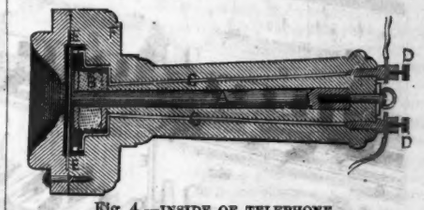


Fig. 4.—INSIDE OF TELEPHONE.

appearance of the instrument. All that is seen is an affair of some hard-wood, with binding screws for attaching wires at one end; the other end is enlarged and hollowed out to form a mouth-piece; on looking into this mouth-piece you can only see a thin iron plate. In using the Telephone, one talks distinctly at the mouth-piece, while another, who has a similar instrument, at the other end of the wire—which may be five, ten, or fifty miles long—holds the mouth-piece to his ear, and hears distinctly the words that are spoken. You will recollect that I told you of speaking with a lady who was three miles or more away; just such an instrument as here shown was used. The real size of the Telephone is not quite six inches in length, and about three inches across the large end. But you will wish to know what is inside of the instrument.

The Machinery of the Telephone,

this is given in figure 4, which shows figure 3 divided lengthwise. Beginning at the upper or wide end we have the mouth-piece, and directly below this is a thin iron plate, the section of which is shown by the white line, *E*. As the plate used for taking the portraits called "ferrotypes," or "tin-types," was found to be of the right thickness—or more properly, thinness, this is used, though any other very thin iron would answer as well. In the center is a small steel rod, *A*, which is a permanent magnet, and this can be moved up and down to fix it in just the right position, by the screw seen at the lower end. We now notice the most important part, shown at *B*, which is a sort of spool, around which are wound many yards of fine copper wire, which is covered with silk; the two ends of which, *C*, *C*, pass down through what we may call the handle of the instrument, to the binding screws, *D*, *D*. This being the arrangement of the parts—how do they work? Let us go back to our figure 1, and we find we have the same parts that were described there; we have a steel magnet, and a coil of wire, but in the Telephone the coil is of much finer wire, and wound round and round a great many times to get the needed power. Then in place of the sheet-iron,

c, in figure 1, there is the very thin plate, *E*, figure 3, which is fastened at its edges. When one speaks at the mouth-piece, the motion of the air caused by the voice, sets this thin iron plate in motion, just as the parchment of the "Street Telephone," described in May, is made to vibrate by the voice. Of course these movements of this iron plate, or diaphragm, are very minute, but it does move, and at every motion or vibration, it disturbs the magnetism in the steel-bar, *a*, which in turn, sets up a current of electricity in the coil of wire, *B*, and we have just what was described in figure 1, over again, only in a vastly more delicate manner. But with one Telephone we can do nothing; to be of use the instrument

Must not only Hear, but Talk,

and to complete the affair, the instrument (figs. 3 and 4) is joined by means of wires attached by the binding screws, to another instrument precisely like it. These wires may be a few feet or a few miles long. Now you see there will be just such an arrangement as was shown in a coarse way in figure 2. A person speaks at the mouth-piece of one telephone, while another person holds the other telephone to his ear. The voice causes the iron plate to vibrate, that disturbs the magnet, which in turn starts a current of electricity along the wire; this current passes around the magnet in the other telephone, and affects that magnet, and that sets the thin iron plate in that instrument to vibrating. And here comes the curious part of the whole affair. The iron plate, or diaphragm, in the second telephone, will repeat exactly the motions of the first, and as the first is set in motion by the vibrations of the air made by the voice, the diaphragm in the second instrument will, by its vibrations, set the air near it in motion, and produce a precisely similar sound. If you at one telephone say, "Ah," the vibrations that this sound causes in the diaphragm, will be repeated by the diaphragm in the other telephone, which will set the air in motion to produce "Ah." What happens with this simple sound, takes place with all other sounds, and so exactly are the vibrations at one telephone repeated by the other—the very tones of the voice, whether of speaking or singing—are reproduced,

Even Though Miles Away.

The Telephone is already coming into use, and has the great advantage over the telegraph in rapidity, and in not needing a skilled operator. Any one who can talk, can use it. Many are put up between offices and factories, and between the dwellings of merchants and their offices....Just as I write this, news comes of another wonderful invention,

The Microphone,

which is a contrivance that magnifies small sounds, just as the microscope magnifies small things. It is said to enable one to hear even the step of a fly, and to magnify a whisper to a loud tone, while ordinary speech is a roar. This will help the Telephone wonderfully.

Pigeons and Pigeon-Houses.

Pigeons are usually the first pets the country boy has; a pair is given him, or he trades with another boy for them, fits up some kind of a pigeon-house in the peak of a barn, or in a shed, and his pigeons, while very interesting to him, soon become a pest on his father's and the neighbors' farms.—This is not the kind of pigeon-keeping we would encourage, but there is a kind which the older boys may undertake with profit. Pigeons on a farm are generally, and justly, regarded as a nuisance. They are great feeders, and unless food is supplied to them, they will get it where they can, and in the garden and grain-field they are about as bad as so many crows, for they will go for the sown peas and grain. On the other hand, they are of such a quiet disposition, that, if food be furnished them close at home, they will not wander for it. A friend who raises pigeons largely, to supply his own table, and who is also a good gardener, and values the products of his gardens, informs us that he has no trouble with his pigeons, as he keeps food where they can always get it, and they do not stray away. Those boys who live near watering-places, or where there are hotels or good markets, may no doubt make pigeons profitable by supplying the demand for squabs, which always bring a good price at such places.

Fig. 2.—A NEAT PIGEON-HOUSE.

The pigeon-house is generally a make-shift affair, but those who go into pigeon-raising as a matter of profit, should make proper arrangements for the birds, and not only provide them with a suitable house, but see to their proper feeding, and what is quite important, provide protection from cats, rats, and all other enemies. Our correspondent, Mr. L. D. Snook, Yates Co., N. Y., sends drawings of a house of this kind, which seems to provide properly for all requirements. The outside (fig. 2) is 10 by 16 feet, 8 feet high at the eaves; it has a tight, shingled roof. Lighting-boards are provided, as shown in the engraving, are four inches wide, and supported by brackets at a distance of six inches from the side of the building. The engraving shows a door in the end with a window at each side; the matter of windows may be arranged according to convenience, all that is necessary being to have the inside fairly lighted. Figure 1 shows one side of the interior, where there are platforms, *K*, *K*, upon which the birds enter, and which hold three nesting and hatching boxes, *P*, *P*. These boxes are 4 feet long, 9 inches wide, 6 inches high in front, and 10 inches high in the rear, and are provided with a sloping hinged cover. Each of these is divided into five compartments, with an entrance to each in front, which opening is 3 inches wide by 4½ inches high. Roosts, *B*, *B*, are provided, which are hinged to the platform, *K*, and held in place by the upright, *E*; these roosts may be let down when it is desirable to examine the nests by means of a step-ladder placed against the platform. On the lower tier, on each side, are but two hatching boxes, to allow of a number of roosts, of strips a foot long, to be placed between them. At *T*, is shown a box for storing feed, which should be given to the birds within the house, in stormy weather. A building of this kind should be placed where it can be shaded by trees in the heat of the day, and in a quiet place, where the nesting birds will not be disturbed by noises. Besides abundant feed, the birds should be constantly supplied with water, and have a mixture of salt, sulphur, and gravel, placed where they can always get at it.

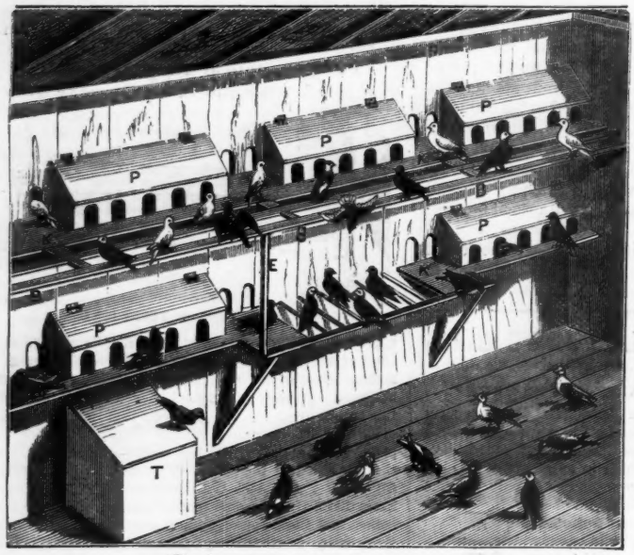


Fig. 1.—INTERIOR OF PIGEON-HOUSE.

A Rag Show.—An English magazine called "Little Folks," holds a yearly show of Rag Babies, Rag Animals, and groups of these, for which it offers prizes in books. The best of it all is that the articles offered are afterwards sent to the sick little ones in the children's hospitals, so that those who get no prizes know that they have given pleasure to some poor sick child.

Aunt Sue's Puzzle-Box.

ENIGMATICAL BOUQUET.

1. Part of the rainbow. 2. What some of us love to kiss. 3. A sugared letter. 4. What children love, and a bunch of hair. 5. A trap and its victim. 6. A crystal of water and a tear. 7. Went up.

PUZZLE.

My fifth is one-half of my first,
My whole is divided by two,
My second's the same as my fourth,
Now guess it you surely can do.

To aid you more hints I will give:
Twice my third is a tenth of my first,
My whole of five letters is seen,
Which all should be, even the worst.

JUVENIS.

SQUARE WORD.

1. Apt. 2. A vegetable. 3. A direction. 4. A girl's name. NIP.

CROSS-WORD.

My first is in butter but not in milk.
My next is in satin but not in silk.
My third is in rain but not in snow,
My fourth is in fast but not in slow,
My fifth is in ache but not in pain,
My sixth is in snow but not in rain,
My seventh is in light but not in heat,
My eighth is in sofa but not in seat,
My ninth is in Autumn but not in Fall,
My tenth is in whole but not in all,
My eleventh is in word but not in rhyme,
My whole names a man of ancient time. ISOLA.

NUMERICAL ENIGMAS.

(S. W. W. offers the following enigma as a *stumper*.)

1. I am composed of 39 letters:
My 15, 2, 28, 11, 37, means time and pains.
My 26, 1, 20, 13, 39, to be acquitted.
My 10, 18, 3, 33, is a blemish.
My 29, 17, 5, 24, to polish.
My 38, 30, 32, 12, 4, 9, 20, 36, 34, to pass.
My 23, 6, 21, 14, a side-piece.
My 7, 27, 8, 22, 19, 30, 25, a butcher.
My 31, 16, 35, 14, is a kind of cloth.
My whole is a familiar quotation from YOUNG'S "Night Thoughts." S. W. W.

2. I am composed of 12 letters:
My 4, 11, 5, sometimes goes with a kiss.
My 12, 8, 7, 3, is a planet.
My 12, 10, 9, 6, is to sap.
My 1, 2, 9, is a propeller.
My whole is a common flower. FRANK KENNEDY.

A VERY EASY ENIGMAS.

3. I am composed of 9 letters:
My 5, 8, 3, 4, is something that you are sure to find in the woods.
My 6, 7, 2, is an animal.
My 1, 9, 7, 2, is what you see in winter.
My whole is a very nice vegetable. P. T. VIBERT.

4. I am composed of 11 letters:
My 8, 2, 11, is the shepherd's deity.
My 9, 5, 8, is the name of a vine.
My 1, 7, 4, is a pronoun.
My 1, 10, 3, 6, is what most cows have.
My whole is a musical instrument.
MYRA A. HANLON.

ANSWERS to the Puzzles in May number will be given next month.

ABOUT THE PRIZE ENIGMA.

One letter received on the subject, will make a very good introduction:

"*Dear Aunt Sue:*—I send you with this, the answer to February prize enigma. You are the one that should get a premium for getting up such a puzzle; it superseded the Eastern question and the silver wrangle at our house. Geography and political economy were put aside, and etymology came to the front. We don't think that Miss Clara Josephine will have a very heavy contract in making the drawings next May.—Rspctfly Yours, G. M. T."

Miss C. J.'s aid was not called into requisition, for only seven answers were sent. Very pleasant letters accompanied most of them, telling the process by which the desired end was attained.

The answer to the enigma is, "Pungled; said especially of grain which has lost its juice."

The names of the patient and persevering solvers are: LYMAN STEDMAN, Jeddo, Jefferson Co., Ohio; H. A.

FRINK, Westerly, R. I.; H. E. WHITNEY, Monticello, Sullivan Co., N. Y.; GEO. M. TAYLOR, Riverside, Burlington Co., N. J.; CYRENE GRIFFIS, Montrose, Susquehanna Co., Penn.; J. A. BOSTON, Newburyport, Mass., and JOHN B. BAKER, Concord, Merrimac Co., N. H.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

ALPHABETICAL QUERIES.—1. V inverted makes a caret (carrot). 2. Pea and tea (P and T). 3. B (bee). 4. U (you). 5. B, C, and E (be, see, are). 6. J (jay). 7. I (eye). 8. G (gee). 9. D (dee). 10. Y (why). 11. W (double you). 12. Q (cue). 13. Red C (sea). 14. X specked (expect). 15. Dutch S (duchess). 16. Bar on S. 17. L (ell).

CHARADE.—C—A—P—Cap.

NUMERICAL ENIGMA.—Learning is to the studious, riches to the careful, power to the bold, and heaven to the virtuous.

CROSS-WORD.—Constantinople.

ALPHABETICAL ARITHMETIC.—S14)8629O1(2709.
Key—Palmerston.

PI.—Black lead does not contain a single particle of lead, but is composed of carbon and iron.

DROP-LETTER PUZZLE.—Never cut out a piece of a newspaper till you have looked on the other side.

TRANSPOSITIONS.—1. Teach, cheat. 2. Rome, more. 3. Broad, board. 4. Desert, rested. 5. Peach, cheap.

SQUARE WORD.	CONCEALED FISH.
	Forward.
H E A V E N	
E R M I N E	1. Dace. 2. Sole. 3. Ling.
A M A Z E D	4. Rudd. 5. Tench.
V I Z A R D	*Backward.*
E N E R V E	1. Dab. 2. Shad. 3. Diodon.
N E D D E R	4. Goby. 5. Gar.

Correspondents will save time, if they will address their letters (to Aunt Sue) to Rowayton, Fairfield Co., Conn., from July to December of this year. But please remember that AUNT SUE is *not Orange Judd Co.*; the latter must be addressed at 245 Broadway, N. Y. City.

The Young Microscopist's Club.

A share of last month's talk was given to an account of a common insect parasite upon chickens, and it was there stated that those animals that fed upon other animals, and those plants that fed upon the juices of other plants, were termed *parasites*, and we may add that those having this manner of living, are called

Parasitic Animals and Plants.

Not only do the higher animals afford homes for insect and other parasites, but *insects themselves* are preyed upon by other insects, a matter no doubt of much discomfort to the insects thus visited, but one of real importance to us, who are obliged to look upon some insects as our enemies—as we shall presently see. A remarkable instance of an insect being troubled by parasites, was brought me a short time ago by a gentleman living in Westchester Co., not far from New York City. He brought specimens of the Colorado Potato-Beetle—now generally known as the "Potato Bug"—so completely covered by small creatures, that the beetle itself could not be seen; it was even more thickly covered than the beetle at *a*, figure 1, which shows both of the natural size. The little creature is

A Parasitic Mite,

which might be called the "Potato-Beetle Mite," were it not found on other beetles also. I think that I have already told you that mites differed from the true insects, among other points, in having the body all in one piece. This mite was first described by Prof. Riley, who gave it the scientific name of *Uropoda Americana*, there being other species in Europe. The name *Uropoda* is from Greek words meaning *tail* and *foot*, on account of a peculiar tail-like arrangement by which this attaches itself to the beetle. The engraving is from Mr. Riley's work on "Potato Pests"; *b* gives the mite enormously magnified, showing its underside. To hold fast to the beetle, the mite has a pair of remarkable organs, which, when not in use, lie just under the skin, between the legs, as shown by the lines in *b*, but when in use, they are extended as in *c*, reaching out beyond the head; each has a minute claw at the end, more plainly seen at *d*. We now come to the "tail-foot" part, from which the creature is named. In Europe this was long supposed to be a kind of silk, to enable the mite to hold fast with, but Mr. Riley has discovered that the thread is the dried excrement of the mite, made to serve as a sort of anchor; the thread of this is shown at *e*. As you may suppose, so many parasites as at *a*, all feeding upon it, soon

Put an End to the Beetle,

and this brings us to a very interesting thing concerning injurious insects. Scarcely one of you, who live in the country, at least in the Middle and Northern States, but has seen the Colorado Beetle, or "Potato Bug," and those who live elsewhere have heard much about it; how rapidly it ate up the potato vines, and if the insects were allowed to have their own way, we should be obliged to go without potatoes. To get potatoes at all, in many parts of the country, the farmer is obliged to poison the beetles. But when an insect increases in large numbers, its natural enemies increase also, and though most people look upon birds to keep insects in check, these probably do but little as compared with

Their Insect Enemies,

which attack and feed upon them in one form or another, whether in the egg, the larva, the pupa, or perfect state. Besides a spider and the mite here described, there are known to be *over two dozen* true insects that prey upon the potato-beetle. This beetle, being so destructive, has been watched more closely than others, but it is found to be the case that, whenever an injurious insect gets to be very abundant, its insect enemies increase rapidly also. Now is not this a wonderful arrangement of things? By growing millions of acres of potatoes, we allow of the increase of an insect that, when it only had certain wild plants to eat, gave no trouble, but with this food provided for it, it multiplied so as to threaten to stop potato culture; but other insects come to our help in dozens, and if we could afford to wait, the evil might in time be cured without the use of poison. As it is, we are greatly aided by other insects. Does not this look as if some Great Mind really directed these matters?... Though I have said so much about parasites, I must just mention another, a dozen or more being sent every season as a great wonder. Figure 2 shows what a great many of you must have seen; a

Fig. 2. TOMATO-WORM.

Tomato "Worm," or Caterpillar,

is a great, green, unpleasant-looking, but harmless creature to all but plants, and those it eats heartily. These caterpillars are frequently seen almost covered with white things, which most persons take for eggs. They are really little cocoons. When the caterpillar was young, a very tiny fly stung it and dropped in her eggs; these eggs hatched, and numerous little caterpillars or maggots, lived inside the big one; when they reached their full size, they ate their way out, and spun these little nests, and went to rest. If you find a "worm" thus loaded, place some of these cocoons under a glass, and you will no doubt be able to see and examine the perfect little fly. It is very small, and you might not notice it unless on the watch for it....Last month I promised to say something

About Mounting Objects.

In March last, I described one method of mounting seeds and other opaque objects, and will now try to answer those who have inquired about transparent objects, or those seen by transmitted light, and as our microscope

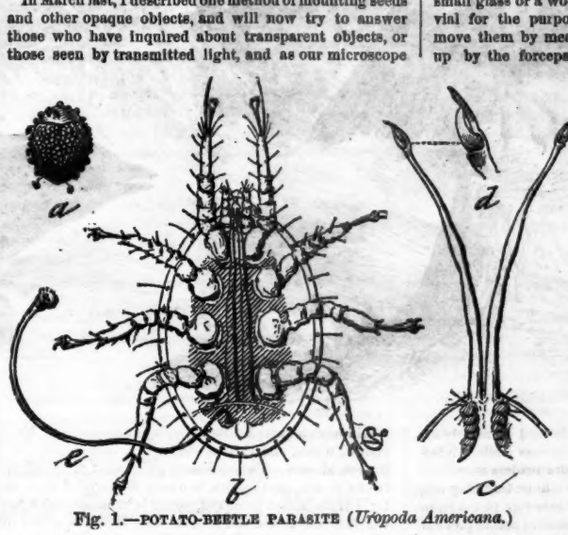


Fig. 1.—POTATO-BEETLE PARASITE (*Uropoda Americana.*)

and our talks about it are for beginners, I can only give you the simplest methods, and you will find that these will require all the time and skill you will care to give, while the procuring of the materials will be more of an expense than some will care to go to. In the first place, you will need some

Glass Slides;

these are sold at the instrument stores, and for microscopes of high power should be of the finest plate-glass; for your purpose, the clearest glass that you can find among the glazier's scraps will answer, and you can get the glazier to cut them for you in pieces three inches by one, which is the usual size, though some prefer them 2½x1¼ inch. Then the objects must be covered with thinner glass; for nice preparations, to be used with high powers, thin glass covers are made on purpose, varying from 1/50 to 1/150 of an inch in thickness; these are round or square, one half to one inch across, and cost from $1.25 to $3, or more, an ounce, according to thinness. These must be used for high powers, but to mount objects for our Microscope, while it will be neater and better for those who can afford it to have this thin glass, you had better begin with the very thinnest you can find, and practice at first with that. You will also need some

Canada Balsam,

which those of you who live where there are Balsam Fir trees, will know all about, and that it is found in blisters in the bark of these trees, and is easily collected by cutting these swellings, and squeezing out the honey-like liquid into a spoon. Most of you will have to get it of the druggists; an ounce in a wide-mouthed vial will last a long time. Canada Balsam is a natural mixture of a clear resin with oil of turpentine, and when exposed, the turpentine will evaporate and leave the solid resin. If left exposed, it will, after a time, become very thick and finally solid. If the vial is stopped by a cork, it will be apt to cement the cork in firmly, and it will be well if you can find some kind of a tin box, to go over the mouth of the bottle like a cap.

Other Articles that may be Needed,

are a small bottle of Oil (Spirits) of Turpentine: one of Alcohol; and one of Solution of Potash (Liquor Potassæ of the druggist). Besides these, you will need small forceps, or tweezers, and mounted needles, already described in the sheet that goes with the microscope. A brick or piece of soapstone that you can warm on the stove, or in the oven, will also be needed, and it will be convenient to have a contrivance for holding the slides when hot; for this the spring clothes-pins will answer, arranged by cutting off one arm, as suggested by Prof. Phin, as shown in figure 3. After all this preparation,

Fig. 3.—FOR MOUNTING OBJECTS.

which looks more forbidding than it really is, let us proceed to

Mount a Fly's Wing.

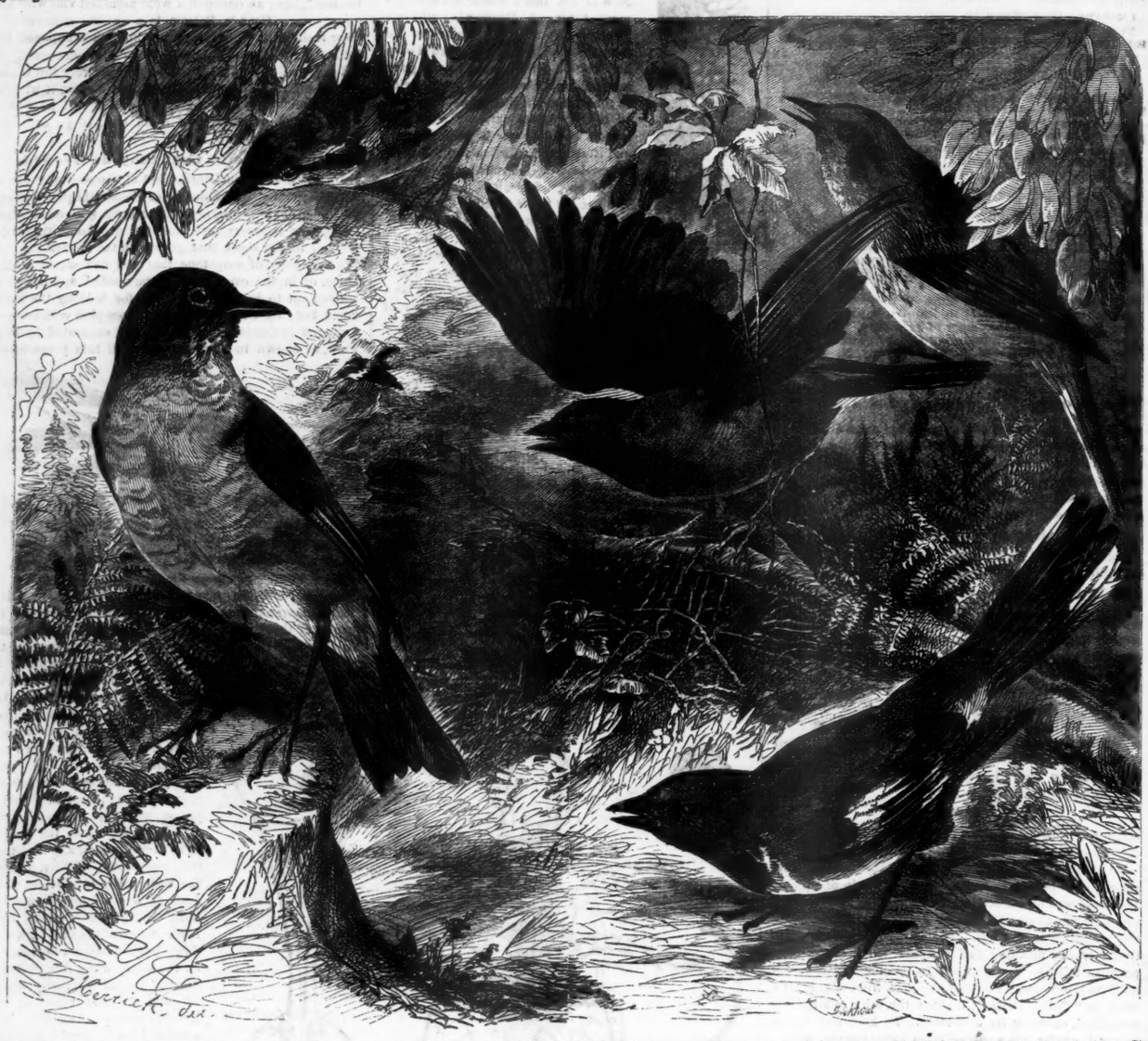
First clean your slide thoroughly, and put it on the warm brick or other contrivance for warming, until it is warm enough to make the balsam very thin; drop on the center of the slide a single drop of the balsam, from a small glass or a wooden rod, which is to be kept in the vial for the purpose. If any air bubbles appear, remove them by means of a needle. Then, take the wing up by the forceps, and place it gently on the balsam, putting it on in such a manner that no air will get between it and the balsam; drop on a very little more balsam, and then carefully put on the cover, which has been warmed; the cover should be put on, one edge first, and gradually let down upon the balsam so as to not inclose any air; press the cover down slightly, and put the slide away in a warm place, such as a shelf near the stove, until the balsam becomes quite hard. Some of the balsam will no doubt project beyond the cover up on the slide; when this gets hard, most of it can be easily scraped off, and the rest removed by a little turpentine on a cloth. With some objects it may be necessary to hold the cover down with a clothes-pin clip while hardening. Sometimes the wing or other object will not take to the balsam readily, but leave air between the two; in this case the object is first soaked awhile in oil of turpentine, which usually removes the difficulty.

Some Small Insects Entire,

as well as the feet and other parts of large ones, are sometimes mounted in Canada Balsam, but first require soaking in the potash solution to make them more transparent; they are then soaked in water to remove the potash, then in strong alcohol to take out the water, then in turpentine to get rid of the alcohol, and finally they are ready to go into the balsam. When the object is mounted, the slide may be covered on one side, or both, with colored paper, leaving circular openings over the object, and the label written on this, or the glass may be left uncovered, and a small paper label attached with gum tragacanth, or paste.—Much in the way of mounting must be learned by practice; those who wish to know of other methods, should have some work on the subject. One of the best works, at a moderate price, is Prof. John Phin's "How to Use the Microscope." Price 75 cents.

More About Birds.

The account given last month of the strange Bower and Gardener Birds, has interested not only the youngsters for whom it was intended, but many of our older readers have shown much interest in them, and would like to know more—especially about the Gardener Bird. That being a quite new discovery, we gave the fullest account we could find, and we must wait until some other naturalist visits the island where it is found. Some of the youngsters wish we would tell more about and give more pictures of our common native birds, and we are always glad to have our young friends express their wishes. While the greater number of our junior readers were born in, and live in the country (and we hope that they may find it best to stay there), still very many go to the country for a few months only, in the summer; and to these all the country objects, the trees and flowers, the birds and insects, seem quite different from what they do to those who are always among them; and it often happens that those who are in the country for a short time only, learn more about, and really know more about, country objects than those who are constantly among them, just as a country person visiting a large city will see more of the city's "sights," than one who lives there will see in ten years. There is one trouble about giving pictures of birds. When you see a bird on the wing, or perched upon a twig, the first thing that strikes you is its *color*. This is particularly the case with such brilliant birds as the Scarlet Tanager, which glows as it flits among the green leaves like a ball of fire. When we show you a picture of this bird, no matter however carefully it is drawn and engraved, you see only black and white, and it does not bring the brilliant Tanager to your mind at all. But you must recollect that color is only one of the marks by which birds are known, and one of the least constant. Birds change their plumage with age, and with the season; while the sexes, male and female, are almost always very unlike in this. So naturalists, in describing birds, take characters that are more permanent: the form of the head and bill; the legs and feet; the wings and tail, as to number of certain quills, and other points with which color has nothing to do. You are not to understand from this that color is of no importance in describing birds, but that while it is the first thing that strikes your eye, you should, in observing the birds you see, take notice of other points. The picture here given of a group of our native birds, illustrates what has been said. If we could show you the birds themselves, you would have a quite brilliant display of colors: red, black, yellow, white, and various shades of brown, would catch the eye at once. The bird most prominent in the picture is one of the best known in nearly all parts of the country. If its breast were red, you would at once recognize the familiar Robin-red-breast. Our Robin is a very different bird from the English Robin, and is not very closely related. When our ancestors came to this country, they gave to the plants, the birds, etc., that most resembled those they had left at home, the familiar home names, and gave that of Robin-red-breast to a bird about twice the size of the English Robin. If the Robin could write or speak, what an account he would give of us "featherless bipeds." It would run something after this style: "These animals called men, who are born without feathers, and are obliged to rob the poor sheep to keep themselves warm, are very glad to see us in early spring; they praise our song, and allow us to come upon the trees about their houses because we take the caterpillars to feed our young; they let us follow the plow, for we pick up lots of grubs and worms, and they only praise us during the spring months. They print in their papers that each one of us destroys a worm every $2^1/_2$ minute; and sometimes tell how far the worms, put end to end, would reach, that we require to rear a nest of young. We are very lovely birds until cherries are ripe; but then, if after working hard all the spring months to rear our young on insects and worms, we like a little fruit with our meat, and go to the trees and pick out a few wormy cherries—pop—bang—dead Robins! Then what is more than all, the fall horticultural meetings pass resolutions against us, and call us rascals; but some have the grace to say that we do make a good pot-pie. If these men would only let us mind our own business, we could put money in their pockets."—So much for the Robin's story. Watch him carefully, and see if he is not right. The bird on the ground in the picture, though often called Ground or Marsh-Robin, does not belong to the same family with the common Robin, but to the Finches. Its common name in some parts is "Towhee Bunting," and in others, "Chewink." It is common in most of the Eastern States; its colors are very distinct, being mainly black and white, with some chestnut-brown on the sides. It builds its rude nest on the ground, and is essentially a ground bird. The note of the male is *tow-he'e'che'de*, which he gives out as a warning when the nest is approached. The Cow-bird, or Cow Blackbird, the one that appears in the center upon a branch, and in a fluttered state, is not a very pleasing bird. Its general color is shiny black and purplish-brown, and is often to be seen in pastures with cattle, following them closely that it may get at the insects as the cattle eat away the grass. This is a mean and lazy bird, building no nest of its own, but dropping its egg in the nest of some other bird, usually that of an innocent Warbler, which poor creature hatches out the Cow-bird with her own young, and the intruder often grows so fast as to crowd the rightful owners out of the nest. The bird at the upper right-hand part of the picture is one of the numerous Warblers, the "Magnolia Warbler," or "Black and Yellow Warbler." It is well marked by its yellow breast streaked with black. The little fellow, looking in from above, is "Blackburn's," or the "Hemlock Warbler," and is the most beautiful of all the Warblers, on account of the intense orange or flame-color of its throat; the back and crown being black.



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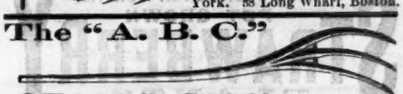

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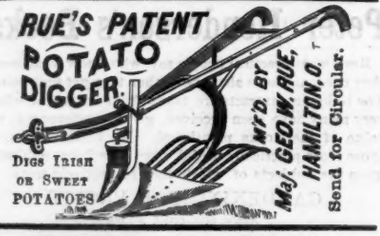

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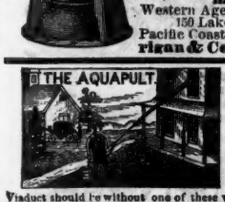

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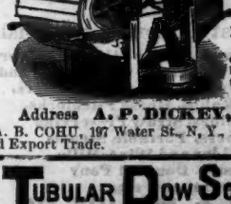

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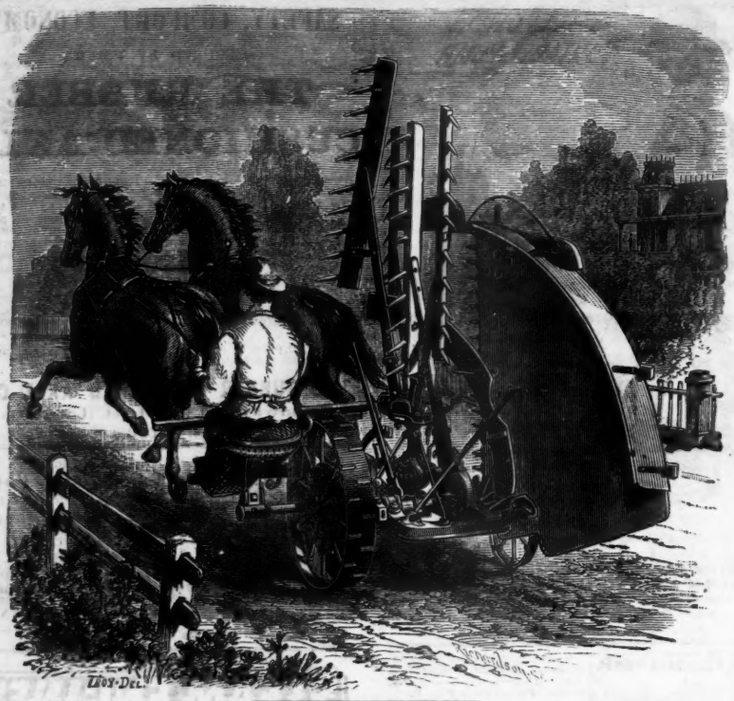

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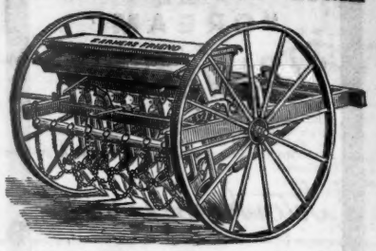

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it runs through in sufficient detail every source of manure on the farm, discussing the methods of making rich manure; the proper keeping and applying it, and especially the

Uses of Manure,

and the effects of different artificial fertilizers, as compared with farm-yard manure, upon different crops. In this the author makes free use of the remarkable series of experiments instituted years ago, and still continued, by Lawes and Gilbert, of Rothamsted, Eng. The

Remarkable Tables

in which the results of these experiments are given, are here for the first time made accessible to the American farmer. In fact, there is scarcely any point relating to fertilizing the soil, including the suitable manures for special crops, that is not treated, and while the teachings are founded upon the most elaborate scientific researches, they are so far divested of the technical language of science as to commend themselves to farmers as "practical" and inhospitable to science as the Deacon himself. The book should have a hearty welcome from every farmer, except the fortunate few who cultivate soils, the natural fertility of which is not yet exhausted.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 247.

Tumor on Cow.—"H. L. W.," Sandy Hook, Ct. The "bunch on the cow's belly" is probably an abscess, in which case it should be poulticed, and opened when it points. It may, however, be due to an entirely different and much more serious cause. You had best have it examined by a competent veterinary surgeon.

Alsike Clover.—"F. R. G.," Waynesboro, Ohio. Alsike clover may be sown in the same manner as common red clover. It is late in blossoming, so that it is ready for cutting with timothy, which is an advantage. It also succeeds best on moist ground, where red clover is often winter-killed. But we have not yet heard of a case where those who have tried it prefer it to red clover.

Loss of Feathers.—"D." Poultry will frequently drop their feathers when over-fed upon corn, buckwheat, or other heating food. The remedy is to feed only chopped cabbage or turnips, or turn them into a grass field for a few days. A few pills of castile soap, or half a teaspoonful of castor oil, will be of benefit.

Death of Sheep.—"H. D. G.," Bremer Co., Iowa. When a sheep is poisoned, convulsions—a sympton of disease of the brain or spinal cord—rarely ensue. In examining a dead animal for the cause of death, the brain should be looked to, especially when the animal is convulsed or turns up the eyes forcibly. The skull should be sawn through around it on a line with the ears, and the top carefully removed. In your case, when no symptom but convulsions were noticed, the presence of parasites in the brain might be suspected, and the trouble was probably incurable.

Patent Fences.—"G. N. S.," Jersey Co., Ill. A patent may be taken, or at least they are taken, for inventions that have been in use for some years. The patent, when granted, is in force, and valid until upset by legal process, although it is one that might turn out to be void for want of some vital element in the application. Generally inventors deserve something for their labor, and although the invention may seem a simple thing, yet if it is worth making use of, it ought to be worth the cost of a trifling fee.

Have Patience!—"J. G. R.," and others. It is frequently impossible that we can procure illustrations of things requested, or even give replies to enquires on the instant. Sometimes much study is required to answer what may seem a very simple request; and sometimes from necessity, a reply to a query, although in print, may lay over for a month. But, sooner or later, every inquiry or request is attended to.

Feeding Cotton-Seed.—"C." The husk of cotton-seed is very hard and woody, and the lint which adheres to it is injurious to the stock, as it sometimes gathers in balls in the stomach, and often causes fatal inflammation. If fed at all, it should be thoroughly well boiled until soft, and then mashed and given with oat-chaff or cut hay. It is best to feed only the cake as it comes from the oil-mills free from the husks.

Remedy for Broken Wind in Horses.—"H. H. F.," Somerset Co., Pa. Broken wind consists of a violent breathing, with wheezing after severe exertion. It is caused by a permanent thickening of the lining membrane of the bronchial tubes, and is therefore incurable. All that can be done to ease it, is to feed lightly; to be careful against distending the stomach with water or food, and to avoid unusual exertion. Arsenic, in daily 5-grain doses, has been given with benefit. It is continued for several days, then suspended for a time, and afterwards repeated. This dose should only be given under the supervision of a competent surgeon.

Pigs that Won't Eat.—"J. C. J.," Bangor, Iowa. It is rarely that pigs will refuse corn-meal mush, bran, or middlings. A good method of preparing these feeds is as follows: Procure a large barrel, and throw a bushel of corn-meal, bran, and middlings in equal parts into it. Fill the barrel with water, throw in a few handfuls of salt, and stir the whole; leave it to ferment and become slightly sour, then feed. As soon as one barrel-ful is ready, prepare another, and so on, using them alternately. Milk or slops may be used with the water.

Treatment for Chicken-Cholera.—"E. R," Dayton, Ohio. As soon as fowls are seen to void a greenish liquid which smells badly, they should be given some condiment, as pepper, etc., which will soon set them right, unless their food, water, and roosting places are unclean and unwholesome. We find the "Imperial egg food," given twice a week, at the rate of a tablespoonful to a dozen fowls, to be an excellent preventive of disease, and to help in the production of eggs.

Pens at Paris.—As Joseph Gillott & Sons' pens are everywhere, they are, of course, at the "Exposition of '78" at Paris. While making a splendid display of their varied styles of pens, Messrs. Gillott have undertaken to illustrate Richelieu's well known saying, "The pen is mightier than the sword," by presenting a pen which, with its holder, is six feet long. Both pen and holder, which is of the choicest woods, are mentioned as remarkable works of art.

Various Kinds of Cultivators.—"J. M. B.," Elizabethtown, Ind. For the cultivation of vegetables, small fruits, and field crops grown in drills, we find Rue's hand-cultivator, which has several kinds of scrapers, teeth, and plows, for different operations, to be a very good one. It was fully described in the *American Agriculturist* of July, 1877. For cultivating potatoes, the writer uses a double mould-board plow, which earths up two rows upon one side at each passage, the horse walking between the rows.

Value of Potash.—"Z. M.," Queens Co., L. I. The cost of potash varies with the form in which it is sold. Sulphate of potash is higher in cost than the muriate, but still the sulphate is considered cheaper for root crops and fruits, on account of its action on the development of starch and sugar; while the muriate is just as good for grasses and grains. Unleached wood-ashes are worth, comparatively, 15 to 20 cts. per bushel.

Rye Among Corn, sown at the last hoeing, for plowing under the next spring, is a practice often adopted for the purpose of enriching the soil, and is a cheap and economical means to a desirable end. One and a half bushels of seed per acre are used.

Sowing Turnips.—"G. H. W.," Springfield, N. Y. To get a good crop of Swede turnips upon your acre of land, plow and harrow it fine; then with the plow open drills 27 inches apart; drop the 25 one-horse loads of manure in the drills, and cover it by plowing back the soil from each side. Smooth these ridges down by drawing a V shaped harrow lengthwise over them. With a hoe, open a shallow furrow for the seed, using about three pounds per acre. Then scatter along the furrow, upon both sides, about 300 pounds of fine bone-dust, or superphosphate of lime, and cover the seed with the mixed soil and fertilizer, burying the seed about one inch deep. When the plants appear above ground, thin them out to about a foot apart, keeping the rows free from weeds, and well cultivated.

Hay-tedders.—"P. & Sons," Boscobel, Wis. It will pay to use a hay-tedder where 40 acres of grass have to be cut. The cost is about $50 or $60, and hay can be cured with it in half the time required by hand.

Foul Sheath.—"J. W. S.," Henderson, Tenn.—This disease is generally the result of a poor condition, causing an increased and unhealthy exudation from the skin. Where this must necessarily accumulate, as in the sheath of a horse, its decomposition causes great irritation and discomfort, which affects the general health as well as the skin of the contained organ. The remedy is to examine the animal, using a soft cloth and a sponge, with warm, soapy water, to cleanse the parts. If the skin is injured, or any fungoid growths appear upon it, these should be touched with a solution of ten grains of sulphate of copper in one ounce of water, once a day until healed.

Clover in the South.—The report of the Georgia Agricultural Department is rarely without some valuable item of information. Recently we notice a statement to the effect that forty cases of hog cholera were averted, if not cured, by turning the animals on to a quarter of an acre of clover, to graze for one week. It has long been held that this disease springs mainly from mal-nutrition, and too much feeding on corn or other carbonaceous food. The fact that clover—a nitrogenous fodder—in this case averted the threatened disease is of great interest. The culture and use of clover in the South may through this knowledge be greatly extended.

Red Durhams.—"C. F. T.," Buckeystown, Md. The so-called Durhams, or Shorthorns, properly speaking, are generally red, red and white in patches, roan, or white. The favorite color is a roan, which is a mixture of red and white hairs, closely set together. That a Shorthorn is entirely red is not to be taken as an indication that there is Devon blood in the animal. A distinguishing mark of a Devon is the long, spreading horns; while a Shorthorn has short, neatly-curved horns. Red Shorthorns have a richer, purer red than the Devon.

Treatment of Heaves.—"T. S.," Pulaski Co., Ind. Heaves is often an hereditary or constitutional disease, depending upon a narrow and ill-formed chest; at other times it results from nerve weakness, and from indigestion, or it may be a result of all three combined. It is, therefore, seldom successfully treated by medicine. The course usually followed with success is to give moist, cut feed; but little corn, feeding crushed oats chiefly, in its place; to give with the feed four drams of sulphate of iron, with an equal quantity of ground gentian root, and to be careful not to overload the stomach with either food or water.

Sportsmen will find in "Hallock's American Club List and Sportsmen's Glossary" a complete list of the Angling, Athletic, Hunting, Kennel, Rifle, and Associations of similar character in this country; with forms of organization, rules of practice, and a glossary of technical terms: all very useful to members of such societies, and especially to those about to organize. For sale at this office; price 50 cents.

Green Rye for Pasture.—"J. W. A.," Leemon, Mo. We have no reason to believe that green rye, when pastured, is injurious to hogs, or to any other stock. Some persons who have made complaints of it, we know to be fussy people who are in the habit of changing their minds frequently, and who are full of whims; some such complaints have been published in one or two papers, but we have no confidence in them.

Sugar Beets.—"A. B. O.," Clare Co., Mich. A dark, rich, sandy loam, will produce a good crop of sugar beets. The best variety for stock food is Lane's Imperial Beet, grown by Hon. Henry Lane, of Cornwall, Vt., which has yielded 48 tons per acre.

"One Hundred Architectural Designs," is a book from A. J. Bicknell & Co., which contains in 70 pages all these designs for country houses, city houses, stores, churches, stables, summer houses, interiors, etc., etc. Many of them have specifications and estimates of cost. The work is a collection of the best designs from a large number of works, and offers one desiring to build a rich variety to select from. Price, $1, sent postpaid from this office.

Castor Bean Pomace.—"H. J. S.," Natick, Mass. For winter rye, or wheat, use about 400 lbs. per acre. All fine manures should be kept as near the surface as possible: would only harrow it in. When used for top-dressing, it should be mixed with loam or muck, allowing, say 300 lbs. of the pomace per acre. We would compost all such material with muck, stable-manure, or loam, that it might become thoroughly decomposed, and available for plant-food. If well covered with earth, it will thus keep uninjured for an indefinite period.

Milk from a Heifer.—"A Subscriber." It is not only possible, but easy, to bring a heifer, that has not yet had a calf, or that has not even been bred to a bull, into milk. All that is necessary is to excite the lacteal organs by permitting a calf to suck, or by the action of milking with the hands or fingers. We have seen two virgin heifers taking their place among the cows in a dairy, to be milked twice a day, and one of them gave 4 quarts a day at 14 months of age.

Improved Demand for Devon Cattle.—The New Herd Book.—H. M. Sessions, of South Wilbraham, Mass., writes us that the demand for Devons the past six months is greater than for the three years previous. The inquiries come from all parts of the country. Pedigrees for the 5th volume of the "Devon Herd Book" are now being received, and as soon as one thousand entries are made, the volume will be published. Mr. Sessions' herd now consists of 42 head, after having sold 20 in the past few months.

Yorkshire Swine Record.—"G. G. C.," Hamilton (?). There is no record of Yorkshire swine. Had you given the locality of your town, this reply would have been sent by postal card.

Red-water in a Calf.—"J. A. Q.," Closter, N. J. Raw flour in the drink is not wholesome for a calf; it irritates the intestines, and may be the cause of the red-water. In this case we would give two ounces of Epsom salts, repeating it the second day, and some thin, well boiled oat-meal gruel for drink. If the trouble is not removed, give a quarter of an ounce of hyposulphite of soda, daily, for a week, and give linseed-gruel in place of the oat-meal. Feed her no musty hay.

Indigestion in Sheep.—"J. H. H.," Northfield, Conn. An inclination to stretch itself, and stand with the fore and hind legs apart, is a symptom of indigestion in a sheep. The remedy is to give half a pint of raw linseed-oil, and a handful of salt to lick every day. When a sheep of a flock dies, it is best to examine the carcass, and discover the cause of the sickness, or at least be able to give some information upon which advice may be sought. The best book upon sheep raising is Stewart's "Shepherd's Manual," price $1.50 by mail.

Treatment of Tanner's Refuse.—"C. L. M.," Fort Plain, N. Y., and "J. M. Y.," Saratoga Co., N. Y. Tanner's refuse, which consists of scraps of hide, hair, and lime, should be composted with stable-manure, or else spread upon the ground and lightly plowed in. When brought into contact with the moist warm soil, the hair rots very quickly. The whole requires heat, moisture, and time, to decompose. When using this matter we have mixed it with the manure in turning over the heap during the winter, and have found it ready for use in the spring for the corn crop.

Cheap Steamer for Cooking Feed.—"C. J. B.," Norfolk, Va. Descriptions with illustrations, of cheap cooking apparatus, are given in the *American Agriculturist* for November, 1874. These numbers can be had for 15 cents each.

To Preserve Harness from Rats.—"A. C.," Kane Co., Ill. The water-proof dressing, known as the "Tunyoap Water-tight," is said by its manufacturers to make harness that is dressed with it distasteful to rats and mice. As we have found on trial that the claims as to its water-proof qualities are justified, we infer the claim as to its protection of leather dressed with it, against vermin, is also well founded.

"Crackers for Horses."—"J. A. S." Had you given your Post-Office, instead of County, we should have long ago dropped a note saying that we know nothing of the matter beyond what was given.

To Hoist a Wagon-body.—"A Subscriber," Newton, N. J. The easiest way to hoist a wagon-body, is to have two strong hooks in the beam of the shed over the place for the wagon, and to suspend to each hook a block and tackle. Each end of the wagon box may be hooked to the tackle and hoisted, a few feet at a time, alternately, until it is out of the way. Or two pulleys may be hung to the beams, on swivels, and two ropes passed over these hooked to the ends of the wagon-box. The ropes may then be wound up by an axle and winch, fastened to the side of the shed, until the box is raised sufficiently.

Sheep Ticks.—"R. M. H.," Troy, N. Y. Where there is only a small flock, it is easy to hand-pick the ticks. To do this, the sheep is taken in front of the operator, who stoops over it and opens the wool; when a tick is seen, it is quickly snipped in two with a pair of short scissors; the eggs or pupæ are also killed in the same way. We have easily gone through with fifty sheep in this way, in half a day. It is not necessary to provide dipping apparatus for a small flock.

Oats and Peas.—"G. W. J.," Memphis, Tenn. The pea, in the mixed crop of oats and peas which is usually sown in the Northern States, is a true pea related to the garden pea, not the Stock or Cow-pea of the South, which is nearer a bean than a pea. The former pea climbs the oats, and is held up from the soil. The cow-pea, on the contrary, would not do this, but would spread over the ground.

Japanese Persimmon.—"J. B. B." We *think* that this would succeed in Kentucky, unless in an unusually exposed locality.

Value of Eggs.—As a hen may be expected to lay about 12 dozen of eggs, weighing 18 pounds, and to consume 60 pounds of corn in the year, it follows that for each pound of eggs, 3⅓ pounds of corn are used. There is no other animal product afforded so cheaply. Five pounds of corn costs now about 6 cents, and a dozen eggs, which are the product of that quantity of corn, are worth on an average during the year 20 cents. A brood of 10 chicks may be brought to a weight of 2 lbs. each upon a bushel of mixed corn and wheat, so that 20 lbs. of live weight can be produced from 60 lbs. of grain. There is then no more profitable farm stock than poultry.

Improvement of the Southern Levees.—"W. L. S.," Black Hawk, La., gives the fol-

lowing pertinent statement as to the loss caused by ineffective levees in the Southern States. He lives on a plantation that would produce 500 to 600 bales of cotton if the levees were perfect, but in their present imperfect condition only 200 to 300 bales can be produced. If this loss occurs upon one plantation, what is the total loss in the whole of the river country? The question thus becomes one of more than individual importance; it is of great national interest.

"William Cullen Bryant, born Nov. 3d, 1794; died June 12th, 1878," was the simple inscription upon the coffin of one whose long life has been eulogized wherever the English language is spoken. Other journals have discussed his relations as poet, journalist, politician, etc. We record his death as one of our most intelligent horticulturists, and as one who, born amidst rural surroundings, never lost his love for country life, and who found in the forests and the flowers themes for his most enduring poems. While he is claimed as a bright example in other pursuits, we record our high esteem of him as a lover of nature, whether manifested in the more artificial products of the garden and orchard, or in those of the woods and fields.

SHOW-BILLS for FAIRS.—Much of the success of Agricultural, as well as other Exhibitions, depends upon bringing them to the attention of the people attractively. A neat, speaking show-bill is effective for this. Officers of Agricultural Societies who may wish fine appropriate engravings for such bills, can obtain, at low rates, a selection from the largest and best assortment in this country, of Animals, Plants, Machinery, etc., etc., by addressing the publishers of the *American Agriculturist*. The back volumes of the paper will serve as a guide for selection.

Sowing Hungarian Grass.—"A. G. M.," Shenandoah Co., Va. Hungarian grass is generally sown broadcast. The seed is very small, and half a bushel to three pecks per acre is sufficient. We know of no good reason why it may not be sown with a drill along with a sufficient quantity of artificial fertilizer, unless it may be that the operation would be longer and the seed deposited deeper than if sown broadcast. This crop should not be sown until the soil is thoroughly warm, and all danger of cold rains has passed. When sown broadcast, apply 200 lbs. per acre of some artificial fertilizer on the surface, after the seed has been sown upon the newly harrowed soil.

Price of Thorough-bred Cattle.—"S. K." Cattle of the pure breeds are valued at all ranges of prices from $100 up to $50,000, according to their character for fancy points, or the consideration in which their owners hold them. Fair useful cows can be purchased for $200 to $300, and bulls for $100 to $250.

Sowing Grass in Woodland.—"B. P. W.," Raleigh, N. C. There are many opportunities of providing valuable pasture lots by seeding wood-lots down to grass. If the undergrowth and rubbish are removed, and the ground lightly broken up with the plow and harrow, it may be seeded without difficulty. Orchard grass, and Kentucky blue-grass, thrive best under timber. A bushel of each may be sown per acre.

Wheat in South Australia.—The following statistics of the wheat-crop in South Australia, will not only give interesting information regarding the agriculture of this British Colony, but will also tend to show that the low average of the American crop is even surpassed in lowness by that of Australia. The figures for the past four crops are as follows:

Year.	*Acres in Wheat.*	*Produce bush.*	*Average per Acre.*	*Price per bush.*
1873-4	734,734	6,173,816	$7.^{89}/_{100}$ bus.	$1.39
1874-5	839,638	9,862,963	$11.^{45}/_{100}$ "	1.13
1875-6	898,830	10,739,834	$11.^{87}/_{100}$ "	1.25
1876-7	1,083,732	5,857,569	$5.^{24}/_{100}$ "	1.50

The Australian farmer can by no means rejoice over his American brother; on the contrary, the latter may congratulate himself that he is not the only, nor the worst sufferer, from small wheat-crops.

Bullet in Horse's Thigh.—"W. L.," Crockett, Tex. To effect a cure of a wound caused by a rifle shot, the ball must be extracted, which can only be done by a surgeon. You had best call the ablest one in your neighborhood. Cast and confine the horse for him, and let him operate as if the patient were a man.

Artesian Wells.—"J. L. B.," Grant Co., W. Va. No one can say if an Artesian well can be procured except by testing the question by boring for the water. On examination of the locality, a competent geologist *might* give an opinion as to the probability of success, but no certain promise. For success, one must strike a subterranean current which has its source above the level of the mouth of the well. To do this is not always possible, and rarely probable. The Driven Well is an excellent substitute for the Artesian, and will work in any locality where it can be put in without excavating boulders or ledges.

Production of the Best Cows.—"H." The best cows sold in the New York City markets, and quoted at the highest prices, viz., from $60 to $80, will give from 20 to 22 quarts daily.

Sanford Corn.—"R. D. B.," Bedford Co., Va. We can not say where the Sanford corn, which is a kind very useful for fodder, can be procured. There have been many inquiries for it this season that we were unable to reply to, for the reason that those who have it neglected to advertise it.

To Rid a Barn of Rats.—"A Subscriber." The method is as follows: Procure several empty barrels, and put a quantity of bran or grain in them, and leave them for the rats to feed in without disturbance for a few days. Then remove the bran, and half fill the barrels with water, covering the surface with bran. The rats will go into the barrels without hesitation, and many will be caught. To prevent the increase of rats, avoid having any hiding places, leaving the floors open to the entrance of cats, raise all the sheds and buildings above ground on posts, and have no wooden floors.

Nuts and Nubbins.

The Virginia bell-punch is not a thermometer—it is more like a bar-room-meter.

It is said that sliding down hill was the direct cause of over six hundred deaths during the last winter. Moral—Always slide up hill.

Statistics show that the number of idiots is increasing; and yet some newspapers continue to make war on quack doctors. What is a quack doctor for but to kill off the fools?

A young man sent 60 cts. to a firm in Michigan that advertised a receipt to prevent bad dreams. He received a slip of paper, on which was written: "Don't go to sleep."

"I say, Jim, if five and a half rods make a perch, how many will make a pickerel?"—"You just tell me, first, if two hogsheads make a pipe, how many will make a meerschaum?"

The manufacture of paper from wood has reached perfection in Canada. The superintendent of a mill up there says a tree is cut down and shoved into one end of the mill, and five minutes later there is a neighbor at the other end to borrow the paper.

Franky L. was told to watch a cow feeding on the Common. After a while his mother went out to see if her darling wanted relief, but the cow was nowhere in sight. "Why, Franky!" said she, "I thought I told you to watch the cow."—"And so I did, so long as she was in sight."

We have a bell in our private office. It is used to call one of our boys with. At least that is the popular legend connected with the article. When we want one of the boys we ring the bell, and then go out in the back office and hunt him up and tell him of the fact. It always pleases him to learn that we have been ringing.

A man saw a ghost, while walking along a lonely highway, at midnight. The ghost stood exactly in the middle of the road, and the wayfarer, deciding to investigate, poked at it with his umbrella. The next instant he was knocked twenty feet into a mud-hole. Moral—Never poke at a large white mule when its back is turned.

A Connecticut editor shows his familiarity with agriculture in the following: "T is wheat to n-oat the prograss of the approach of spring. Onion-der hills and meadows nature is bean arrayed in all herb beauty. The farmer manifests corn cider-apple zeal in his effort to secure early field crops, while the gardens, with t-hay-r radish-ional work, are being carefully attended to."

A sharp trick for custom was played by two San Francisco hackmen the other night. As a theater audience was departing they stationed themselves at the door with large and open umbrellas. Without stopping to investigate, those who had umbrellas put them up, while those who had not put handkerchiefs over their heads and broke for the carriages, and the enterprising Jehus drove off with full fares.

The Need of Pronouncing Distinctly.—*Guest at Hotel.*—I want to get up at eight o'clock.—*Hotel Clerk.*—Want what, sir?—*Guest* (emphatically).—I want to get up at eight o'clock.—*Hotel Clerk.*—We haven't any such thing in the house, sir!—*Guest* (angrily).—What do you mean, sir?—*Clerk.*—I mean that we haven't any such thing in the house as a "potato-clock!"

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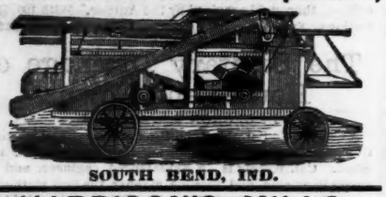

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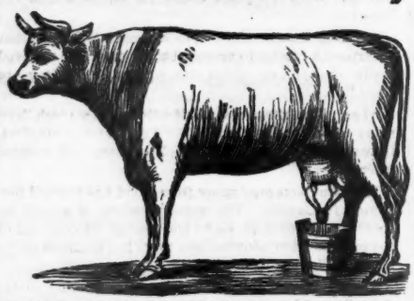

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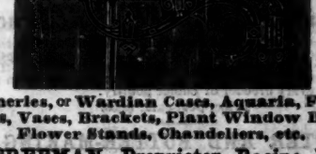

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(price $2.00), and
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(price $2.00.)
By Prof. SAM'L W. JOHNSON.

If I could have but two books in such a library it would be these, as I consider them the most important contributions to agricultural literature of modern times. They contain all of vegetable physiology and agricultural chemistry that any except special students need, and nowhere is there so much of agriculture condensed in so small a space. As works of reference they are indispensable.

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Gardening for the South.
By WM. N. WHITE.
Price $2.00.

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By JOSEPH BRECK.
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Mysteries of Bee-Keeping.
By M. QUINBY. Price $1.50.

Practical Poultry-Keeper.
By L. WRIGHT. Price $2.00.

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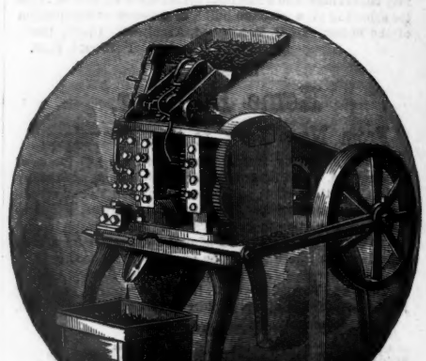

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